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

CRUISE REPORT

FRV MARA

1 September - 16 October 1975

OBJECTIVES

1. To carry out a mid-water trawling and beach-seining survey for 0- and 1-group herring in the Minch.
2. To tag mackerel.
3. To carry out mesh-selection experiments on sprats and small herring.

NARRATIVE

Week 1

"Mara" sailed from Buckie at midnight on 1 September and arrived at Corpach at 1530 on 3 September. The remainder of the week was spent trawling in Loch Linnhe and south of Mull, before tying up at Oban for the weekend on 5 September.

Week 2

The "Mara" sailed from Oban at 0730 on 8 September and during the week worked in Loch Etive, north of Mull and in Loch Scridain. Trawling was not possible in an increasing southwest wind on 11 September and the ship tied up at Scalavaig Pier, Colonsay. Owing to a fault in the auxiliary generator, an early start was made for Oban which was reached at 1030 on 12 September. Mr Henderson left on 13 September and Mr Walsh joined the following day.

Week 3

The ship sailed from Oban on 15 September and made passage for Ardnamurchan Point. Trawling continued throughout the week in a number of mainland lochs from Loch Nevis to Loch Broom, and the boat tied up for the weekend in Ullapool at 1200 on 19 September.

Week 4

On 22 September a course was set in worsening weather for Loch Inchard, where the anchor was dropped at 1215. On receipt of news of a family bereavement, Mr Hutcheon left the boat at Kinlochbervie to return home. Owing to gales the "Mara" remained until the following day, when a course was set for Loch Cairnbahn, and then to Little Loch Broom on 24 September. The "Mara" docked in Ullapool for the long weekend at 1400 on 25 September.

Week 5

The scientists and crew returned to Ullapool on 29 September, with Mr Edelsten as the additional scientist. "Mara" sailed on 30 September and worked in Lochs Ewe and Torridon before proceeding via Portree to Loch Snizort. On 2 October a fault developed in the galley stove and the ship made straight for Ullapool at 2230. Dr Bailey left the ship on 3 October and Mr King joined on the following day.

## Week 6

On 6 October "Mara" sailed direct to East Loch Tarbert and during the week worked southwards to Muldoanich. A direct passage was made back to Stornoway during the night of 9 - 10 October.

## Week 7

After trawling south of Stornoway on 13 October, "Mara" returned to the port to repair trawl warp damage. The following day a passage was made to Lochinver and the remainder of the week was spent working from Handa to Loch Broom. The ship finally docked in Ullapool to drop the scientific staff on the morning of 16 October.

## Mid-water Trawl and Beach-seining Survey

A total of 63 hauls were made with the Gourock mid-water trawl. A list of hauls with the number of sprats and O-group herring caught in each is appended.

In addition eight beach-seining attempts were made. On each occasion the seine was worked at three or four localities in the area chosen.

The coverage of the survey was incomplete. Owing partly to the shallowness of the sea-lochs, the generally adverse tidal conditions, and steaming distance from port, none of the stations around Jura, Islay or those on the mainland south of Oban were carried out. Similarly lack of time ruled out the completion of the survey along the southwest coast of Skye. For reasons of manoeuvrability some other stations in small sea lochs were not attempted, while on occasions hauls were made in the approaches to the lochs rather than in the lochs themselves. To reduce this limitation it is recommended that "Mara" be used as a stern trawler on future surveys of this nature.

Herring were caught in 22 of the 63 trawl hauls. The largest catches of herring were in general made in the lochs in the Oban area. They were generally scarce north of the Crowlin Is and very few were caught along the east coast of the Outer Isles. The only herring caught by beach-seine were in Loch Duich.

The herring in the samples ranged from 6 - 18 cm in length, the size range varying in different areas. Those in the Oban area were in general smaller than those caught elsewhere. Samples were collected in alcohol for meristic and parasitological examination.

Sprats were caught in 31 trawl hauls, but no beach-seine hauls. Their distribution was more widespread than that of herring and no areas of particular concentration were found. The sprats caught ranged in length from 2 - 16 cm in length, but most were less than 11 cm long, and therefore much smaller than those normally caught in the west coast fishery. Otolith samples were taken from most hauls.

## Echosounder survey

Throughout the survey the ship's echosounder was run and annotated at regular intervals. In general clupeids were caught where mid-water traces were seen. These usually consisted of rather patchy discontinuous traces at about 30 - 40 fathoms. Despite the strength of some traces, only small catches were made, and it may be that the net cannot be fished sufficiently fast to sample this type of fish successfully from "Mara". The speed of towing was about 2 - 2½ knots.

## Mackerel tagging

A total of 217 mackerel were tagged during the cruise, 100 with external combination tags, and 117 with internals. The main tagging areas were off Muldoanich, off Longa Is and in Horse Sound.

### Mesh Selection Experiments

Owing to the small catches of Clupeids, the 20 mm codend was left on the net throughout the cruise with a codend cover of 10 mm knotless netting. In general the codend retained all herring and most sprats caught. The 50% retention length for sprats was 4.6 cm, but since fish larger than this will easily pass through a mesh of 20 mm, it seems likely that the net cover was affecting the selectivity of the codend itself.

R S Bailey  
M Walsh  
6 January 1975

Seen in draft - W T Mair

LIST OF STATIONS COMPLETED

MIDWATER TRAWL

	Date	Station No	Area	No of Herring	Sprat
1	3 Sept	44	Loch Aber	40	25
2	4 "	43	Loch Linnhe	2029	1872
3	4 "	42	NW Lismore Is.	206	295
4	4 "	49	S of Lismore Is.	2	12
5	5 "	68	Ardalanish Bay, Mull	0	0
6	5 "	50	NW of Garvelloch, Firth of Lorne	0	0
7	5 "	69	Approaches Loch Buie	0	0
8	8 "	48	Inner Loch Etive	782	466
9	9 "	46	Lochnell Bay	0	0
10	9 "	71	Ardmore, Mull	0	0
11	10 "	72	Calliach Pt, Mull	0	0
12	10 "	74/75	Approaches Loch na Keal	4	4046
13	10 "	76	Loch Scridain	171	428
14	11 "	76	" "	5	78
15	11 "	76	" "	136	772
16	15 "	38	Ardnamurchan Pt	81	539
17	15 "	77	E of Eigg	0	0
18	16 "	33	Loch Nevis	27	0
19	16 "	81	Sound of Sleat	44	2740
20	16 "	32	Loch Hourn	1	2
21	16 "	31	Loch Duich	6	1
22	17 "	27	S of Crowlin Is	43	407
23	17 "	26	NW of Crowlin Is	0	0
24	17 "	25	Applecross Bay	0	0
25	17 "	24	E of South Rona	0	0
26	18 "	20	Loch Gairloch	0	0
27	18 "	19	NW Longa Is	0	0
28	18 "	17	Rudh Re	0	0
29	18 "	15	NW Greenstone Pt	0	0
30	19 "	12	Outer Loch Broom	19	1
31	19 "	11	SE Summer Is	2	0
32	23 "	1	Loch Inchard	0	0
33	24 "	4	Loch Cairn Bahn	0	0
34	25 "	14	Little Loch Broom	288	179
35	25 "	15	Gruinard Bay	0	0
36	30 "	18	Loch Ewe	1	4512
37	1 Oct	23	Upper Loch Torridon	1	626
38	1 "	21	Lower Loch Torridon	0	0
39	1 "	83	Raasay Sound	0	86
40	2 "	84	NE Staffin Is, Skye	0	9
41	2 "	88	N Vaternish Pt	0	87
42	2 "	85	Loch Snizort	0	243
43	2 "	86	Approaches Loch Snizort	0	0
44	6 "	103	Loch Shell	0	116
45	7 "	105	East Loch Tarbert	69	3722
46	7 "	106	Rhu Renish, Harris	0	0
47	7 "	107	Loch Maddy	0	0
48	7 "	108	Flodday Mhor	37	168
49	8 "	109	Benbecula Sound	0	0
50	8 "	110	Loch Skipport	0	0
51	8 "	111	Rhu Bheille	0	39
52	8 "	112	Loch Eynort	0	1
53	8 "	113	Loch Boisdale	0	1

MILWATER TRAWL (Cont)

	Date	Station No	Area	No of Herring	Sprat
54	9 Oct	114	E of Eriskay	0	0
55	9 "	115	NE Muldoanich	0	1
56	9 "	116	S Muldoanich	0	0
57	13 "	102	Kebock Head	0	0
58	13 "	101	Approaches Loch Erisort	0	0
59	14 "	9	NW Rhu Coigach	0	0
60	14 "	10	Enard Bay	0	115
61	14 "	8	Approaches to Loch Inver	0	0
62	15 "	3	NW Handa Is	0	214
63	15 "	7	Eddrachilles Bay	0	0

BEACH SEINE

1	8 Sept	47	Loch Etive (Airds Bay)	0	0
2	9 Sept	47a	" " (Auchnacloch Pier)	0	0
3	10 "	76	Loch Scridain (Kinfinichen Bay)	0	0
4	16 "	31	Loch Duich (Invershiel/ Ratigan Bay)	2306	0
5	19 "	12	Outer Loch Broom (Ullapool)	0	0
6	24 "	14	Little Loch Broom (Kildonan Bay)	0	0
7	30 "	23	Upper Loch Torridon (Head of Loch)	0	0
8	16 Oct	11a	SE Summer Is (Martin Island)	0	0