Dr. Lucas

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Confidential: Not to be quoted without reference to the laboratory.

CRUISE REPORT

F.R.S. "SCOTIA"

13th July - 5th August, 1960.

Objectives:

The primary objective of the cruise was to determine the extent of Norway lobster grounds in certain areas off the Scottish west coast and to obtain information on the stock compositions of this species around the Scottish coast. In addition, a limited programme of hydrography and plankton was detailed.

Method:

Observations on the Norway lobsters and whitefish were undertaken by otter trawling, the hauls being of 30 minutes duration. The codend mesh averaged 67 mm. A small mesh cover was attached to the codend.

Norway Lobsters:

Investigations were undertaken in the Firth of Forth, the Moray Firth, the north-west Minch, the north-east and inner Minch, the south-west Minch and the Firth of Clyde in accordance with the station list. The stock composition of male Norway lobsters in these areas is shown in Table I.

Escapes of all classes of Norway lobsters through the 67 mm codend mesh into the small mesh cover are shown in Table II.

The 50% release point for Norway lobsters for this otter trawl codend, mesh size average 67 mm, appeared to be around 22 mm carapace length

Off the east coast of Lewis Norway lobsters were not taken within the 3 mile limit north of Tolsta Head nor within Broad Bay. However, at the mouth of Broad Bay good hauls were obtained within the limit and this applied also along to the coast between Tiumpan Head and Keboch Head. The best hauls in the area yielded 634, 411 and 233 Norway lobsters respectively per half-hour trawl.

Good hauls were obtained off the Gairloch and Rudh Rea, the best catches being 290, 135 and 116 respectively. Exceptionally large Norway lobsters were taken in hauls in the inner sound.

In the south-west Minch hauls of 196, 191 and 103 Norway lobsters per half-hour trawl were obtained between South Tiree and Mull.

In the Firth of Clyde good hauls were made off Ailsa Craig, 756, 696 and 282 being the best, but the heaviest catches of all were made within the 3 mile limit off Ayr, the best of these hauls being 1093, 786 and 601 respectively per half-hour trawl. The Norway lobsters in this area, unlike those from all the other grounds investigated, commonly carried epizoic barnacles, also two females were taken carrying tangled threads on the abdomen, indicative of recently hatched eggs, whilst the other females had eggs in an advanced stage of development. It would appear, therefore, that the seasonal variations in the moulting and breeding cycle in the Firth of Clyde differ markedly from those occurring elsewhere round Scotland.

Table I.

The percentage size composition in 5 mm carapace length groups of male Norway lobsters in certain areas round Scotland, together with the number of individuals sampled and the mean carapace length in mm.

	No. in Sample	Carapace Length												Mean
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-75	
Firth of Forth	442	0	0.5	0.7	5.2	7.5	17.7	28.5	22.8	12.8	2.7	1.4	0	47.4
Moray Firth	1249	0.3	0.7	6.0	21.0	30.3	24.5	11.7	4.2	1.0	0.3	0	0	38.4
N.W. Minch	1631	0	0.9	4.5	13.6	21.2	22.3	16.2	11.5	5.7	3.2	0.9	+	42.4
N.E. and Inner Minch	897	0	0.4	1.6	9.0	13.0	15.3	14.8	16.9	14.4	8.3	4.1	2.1	47.9
S.W. Minch	566	0.2	0.2	6.9	14.0	17.5	21.8	23.0	11.3	3.9	1.2	0.2	0	41.8
Firth of Clyde	2820	+	1.8	15.0	25.5	23.1	19.5	11.5	3.2	0.2	+	0	0	36.5

Table II.

The numbers of Norway lobsters retained in the codend and escaping into the small mesh cover for each mm size group, carapace length over the range 21 mm and 38 mm, together with the percentage escapes.

Carapace Length mm	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
No. of Escapes	32	68	89	105	104	97	92	92	80	78	68	61	57	51	40	33	21	22
Total No.	60	122	204	314	388	455	567	660	732	795	851	896	915	875	876	799	726	678
% Escapes	53.3	55.7	43.7	33.4	26.8	20.3	16.3	15.2	10.9	9.8	8.0	7.0	6.0	5.8	4.6	4.1	2.9	3.2

In the Moray Firth catches were somewhat erratic due to adverse weather. The best hauls were made 10 to 14 miles north from Buckie, 917 and 818 Norway lobsters per half-hour haul and 5 miles off Banff, 109 Norway lobsters per half-hour haul.

In the Firth of Forth the best hauls were 90, 80 and 55 Norway lobsters per half-hour haul, the catches being affected by adverse weather.

Cod, skate and conger eels were found to be feeding extensively on Norway lobsters.

Whitefish:

The catch of whitefish per one-hour haul is given in Table III.

Table III.

The catch of certain species of whitefish by 30 ft otter trawl per one-hour haul in certain areas round Scotland.

	No. of Hauls	Lemon Sole	Plaice	C. Dab	Cod	Haddock	Whiting	Saithe	Hake	Skate	Dogfish (Squallus)
Firth of Forth	18	9	65	50	32	14	82	+	+	+	0
Moray Firth	22	8	20	11	24	13	10	6	10	1	+
N.W. Minch	22	1	5	11	6	47	50	8	19	1	102
N.E. and Inner Minch	14	2	0	0	4	10	15	49	4	+	276
S.W. Minch	8	+	+	1	2	10	59	0	24	5	56
Firth of Clyde	21	3	2	3	1	1	65	+	10	2	81

The contents of cod stomachs were recorded and the flesh examined for parasites. Whiting were otolithed and other species dealt with according to standing instructions.

Hydrography:

Temperatures and salinity samples were taken from standard depths on two lines of stations (1) Cape Wrath to Butt of Lewis and (2) Tiree to Barra Head. On the former line surface t°C was in the region of 13°C except at Cape Wrath where it dropped to 11.4°C. Bottom temperatures were from 9.5-10.5°C in the centre of the line increasing to over 11°C at the extremities. On line Tiree to Barra Head surface t°C rose steadily from 13.5°C off Tiree to 14.3°C off Barra Head. Bottom t°C were about 10°C from Barra Head to the centre of the line increasing to 13.5-14°C at Tiree.

Plankton:

Plankton observations were carried out in the Moray Firth, the Minch, and the Firth of Clyde. Plankton over the whole survey was sparse. In the Minch the density was greatest in the north and showed a steady decrease towards the south. The only exception to the above trend was a sample from WW12d which yielded a dense collection of Euphausid furcilia, in addition to containing Agalma elegans nectophores and Lensia conoidea.

H. J. THOMAS.
9th January, 1961.

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