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FRV *Clupea*

Cruise 1100C

REPORT

31 July - 12 August 2000

Personnel

C G Davis (In charge)
I Penny
B Ward

Objectives

To determine the distribution and relative abundance of sandeel (*Ammodytes marinus*) on inshore fishing grounds around the Shetland Isles and Fair Isle.

To obtain quantities of sandeel for use as fish food by the Aquarium services, FRS.

Out-turn days per project: 13 days, MFO1P

Narrative

Scientific staff joined *Clupea* in Fraserburgh at 1000 hours on Monday 31 July and sailed to Fair Isle to commence surveying the following morning. The survey continued with only minor weather difficulties until the morning of Friday 11 August, when *Clupea* made way for Fraserburgh, being alongside at 2000 hours.

Results

Between 1 August and 11 August, a total of 56 valid hauls were made on commercial sandeel fishing grounds around the Shetland Isles and Fair Isle. All of the targeted grounds, with the exception of Sands Voe, were surveyed on three occasions. Repeat tows were carried out at the major grounds (Mousa, Braeside, South Sands) to verify the results of the initial tows undertaken there at the beginning of the survey.

Catch rates of up to 4.07 tonnes per 30 minute haul were achieved at the Shetland grounds. In general, all grounds showed a marked decrease in catch rates, resulting from the complete absence of the 2000 year class from some grounds and the relatively low survival (or emigration) of the 1999 year class.

Table 1 gives the catch rate by time of day in kilogrammes raised to a standard 30 minute haul. The number at age of *Ammodytes marinus* caught per 30 minute haul are given in Table 2. Table 3 shows the abundance indices of *A. marinus* caught at the Shetland grounds from 1984-2000 (no survey conducted in 1987 and 1995).

The attached chart displays the general positions of the grounds surveyed.

Approximately one tonne of sandeels was delivered to *Shetland Catch* to be block frozen for the Aquarium services, FRS.

C G Davis
25 October 2000

Seen in draft: A Simpson, OIC

Table 1

A. Marinus, Clupea, August 2000

kg caught per 30 minute haul, during different time periods

Fishing Ground	0700-1100	1100-1500	1500-1900	Total
Grutnes	12	132	Foul haul	144
Voe	405	174	175	754
Boddam	318	89	228	635
Mousa	677	834	77	1,588
Mousa (repeats)	243	906	1,458	2,607
Braeside	319	2,092	4,072	6,483
Braeside (repeats)	450	394	557	1,401
South Sands	373	303	367	1043
S. Sands (repeats)	774	50	556	1,380
Balta	1	7	0	8
Brekkin	+	+	4	4
Fethaland	+	0	3	3
Sands Voe	No haul	162	543	705
Ham 'o' Foula	266	2,765	216	3,247
North Foula	0	+	+	+
South Foula	135	99	273	507
Trink	1,422	445	703	2,570
East Fair Isle	0	0	0	0
E. F. Isle (repeats)	+	No haul	No haul	+
West Fair Isle	+	0	1	1
			Survey Total	23,080

Table 2

Ammodytes marinus, *Clupea*, August 2000

Catch rate by age/ground

Ground	Age									
	0	1	2	3	4	5	6	7	8	9
S. Sands	74,440	33,923	2,603	1,922	638	52	0	0	0	0
B. Side	7,762	98,048	5,748	26,103	12,423	1,040	624	0	0	217
Mousa	95	62,689	2,037	5,181	3,349	58	315	72	0	0
Voe	251	26,033	1686	3023	1875	382	363	0	0	0
Boddam	41,915	19,702	670	1,824	1,183	266	117	0	0	0
Grutnes	1,700	4,617	380	1386	959	291	147	0	0	22
E. F. Isle	0	9	1	5	3	1	0	0	0	0
W. F. Isle	30	70	6	5	1	0	1	0	0	0
Trink	0	65,034	9,984	24,183	3,195	1,369	763	65	0	0
S. Foula	12	8,237	2,227	4,137	2,543	483	788	43	36	18
H. Foula	0	83,648	16,731	21,591	3,417	317	539	24	0	0
N. Foula	0	2	0	3	4	0	0	0	0	0
S. Voe	436	16,617	1,750	9,837	2,339	525	143	66	0	0
F. Land	0	8	4	47	9	2	0	0	0	0
Brekkin	0	0	3	20	8	18	16	3	0	0
Balta	0	26	12	149	9	7	0	1	0	0
	0	1	2	3	4	5	6	7	8	9
Overall index	7,915.021	26,166.32	2,740.172	6,213.396	1,997.214	300.6771	238.5	17.0625	2.25	16.0625
Year class	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991

Table 3

Sandeel at Shetland

Survey indices, mean no fish per 30 minute tow, 1984 - 2000

Year	Age							
	0	1	2	3	4	5	6	7
1984	345,774	47,590	34,613	9,921	3,999	1,369	856	258
1985	121,905	74,509	38,843	23,455	10,872	1,959	962	119
1986	681,869	49,816	11,399	15,376	7,049	2,893	1,210	191
1987	-	-	-	-	-	-	-	-
1988	73,371	898	7,189	4,843	4,612	3,031	1,619	20
1989	813,752	9,059	977	3,820	3,893	2,017	462	86
1990	90,148	30,118	3,771	1,346	1,736	1,142	444	329
1991	1,009,024	10,001	1,925	1,694	750	53	21	5
1992	199,301	465,958	1,215	347	168	43	10	12
1993	635,331	18,180	73,176	2,176	361	150	72	23
1994	98,653	135,158	14,272	41,299	3,369	296	12	17
1995	-	-	-	-	-	-	-	-
1996	589,368	23,056	12,513	1,836	1,185	1,387	524	72
1997	2,953,350	88,582	6,519	8,938	1,211	1,353	1,159	357
1998	559,203	222,137	18,583	2,841	1,840	227	607	175
1999	1,165,594	6,410	10,766	10,377	1351	360	365	54
2000	7,915	26,166	2,740	6,213	1,997	301	239	17





