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FRV *Clupea*

Cruise 1703C

REPORT

9-24 October 2003

Ports

Start Point: Fraserburgh

End Point: Fraserburgh

Personnel

J Kinnear	(OIC)	9-21 October
S Wallace		9-17 October
F Gibb		9-24 October
J Drewery		9-21 October
F Neat		9-21 October
S Murray		9-17 October
K Adamson		17-24 October
C Pert		17-24 October

Gear

Young gadoid trawl BT158 with bobbins and 10 mm codend

Other Equipment

Scanmar
Minilogger
Live fish tanks
Day grab and sieves

Objectives

1. To investigate the distribution of juvenile commercial gadoids in the inshore grounds on the west coast of Scotland, with particular reference to habitat preference.
2. To collect samples of cod, haddock and whiting for analysis of reproductive development, genetics and otolith chemistry.
3. To tag cod, haddock and whiting using conventional tags.
4. To take samples of various fish species throughout the cruise to determine the prevalence of IPNV in wild fish. Samples will also be taken at each location for bacteriology, parasitology and virology to test for the presence of disease agents.

Project Out-turn: 15 Days MFO465

Narrative

Clupea sailed to Aberdour Bay to test gear and equipment on the afternoon of 9 October but departure for the west coast was severely delayed by bad weather and *Clupea* did not leave Fraserburgh until the evening of 11 October, reaching Lochinver on the afternoon of 12 October. Scientific staff joined the vessel in Lochinver then immediately proceeded to sea, the first trawl and grab samples being undertaken that evening on suitable inshore grounds in Clashnessie Bay. The next day work began of Lochinver but the trawl snagged an unmarked object on the sea bed and the entire trawl was lost. The trawl was finally recovered after several hours searching but was severely damaged and a new trawl and ground gear was sent over from the laboratory, arriving in Lochinver the same night. After this incident the weather improved and no further problems were encountered throughout the trip. An extensive survey was completed ranging from Clashnessie Bay to Islay, concentrating on inshore grounds, but excluding sea lochs. A change of staff took place on 19 October at Mallaig, and three scientists left the ship on 21 October at Kyle to return to Aberdeen for a course. The remaining staff stayed on board and conducted further trawling en route to Fraserburgh, including one trawl in the Moray Firth to attempt to recapture tagged cod. *Clupea* docked in Fraserburgh on 23 October and was unloaded on 24 October.

Sampling

Tows of 30 minutes duration were conducted at selected sites using the BT158 net. A mini logger attached to the trawl and was used to collect data on sea temperature and depth. Salinity samples were also collected at each trawl site. All fish were measured and sorted at sea according to standing instructions. Where necessary sub samples were taken from appropriate species and worked up according to the relevant protocols associated with each project. Three grab samples were taken at each trawl site for sediment analysis and benthic organisms collected using a 1 mm sieve.

Trawling

A total of 28 trawls, 130 grabs and 20 salinity samples were taken during the trip. Details of trawl positions are shown on the Table 1 and the chart.

FC1190 - IPNV Epidemiology

Proposal – to take IPNV samples from species of fish following the order of priority, Saithe, plaice, common dab, lemon sole, cod, haddock, whiting, hake and gurnard. To take kidney samples in pools of 10 fish into liquid nitrogen, not to exceed 450 pools. A maximum of three 150 fish tests per area will be aimed for, as well as 10 distinct sampling areas.

Clupea visited 19 sampling areas. This exceeded the 10 distinct sampling sites aimed for. A total of 400 pools were generated and stored in liquid nitrogen. The table below outlines the total number of fish sampled from each area:

In two of the areas (Colonsay and Canna) three 150 fish tests were achieved. This can be seen highlighted in blue in Table 1. As far as sampling areas and number of pools generated, all targets were met or exceeded. With respect to the three 150 fish tests per area, this target was met in two of the locations, but not achieved in all areas due to the total number of fish species being less than 150.

FC1188 - Parasitology

Proposal

To visit 10 locations on the west coast of Scotland ideally five with cod farming and five without and sample gadoids (minimum $n = 30$ up to a maximum 50 per area). The priority order of target species was – cod, haddock, whiting, saithe and hake all to be sampled for parasitology, bacteriology and virology (list II and III diseases). Unfortunately there is currently only one operational farm on the west coast of Scotland located at Loch Craignish in Argyle so to compensate it had been decided to carry out samples at areas which have had or potentially have cod farming in the near future. To this end, areas in Loch Caroy (Skye), Annat Bay (Ullapool) and Loch Striven (Argyle) were identified as potential sample areas.

Samples

The main target species were cod and haddock although as insufficient numbers were present then other gadoids were selected instead such as whiting. All fish were measured, gill and pectoral fin clips were taken for parasitology, kidney loop for bacteriology, the carcass flat frozen for later examination and samples of kidney, heart and spleen taken for virology screening which were snap frozen in liquid nitrogen.

From 9-24 October *Clupea* visited 19 sampling areas with 10 sampled for project FC1188 which met the target of 10 distinct sampling areas. A total of 132 pools were generated for list II and III diseases as well as 350 fish sampled for bacteriology and frozen for parasitology not including 100 flatfish and @ 20 dragonets for Aberdeen University. The table below outlines the total number of fish sampled from each area under FC1188:

In all ten areas (see table 2) were sampled and targets were met or exceeded regarding total number of fish sampled. Rubha Reidh far exceeded initial targets for sampling due to the region being visited twice and the resulting high number of target species (particularly cod) that were present.

Although the Moray Firth wasn't one of the initial target areas it was decided to use this as the tenth area as only nine distinct areas had been sampled due to inclement weather and delays (lost gear etc). Unfortunately also due to the reasons listed previously time was limited meaning only one out of the four target areas (Annat Bay) identified prior to the cruise was sampled.

Fish Tagging

For live fish capture the BT 158 Jackson Rock hopper trawl was modified to include a PVC liner in the cod-end, retaining one cubic metre of seawater in a still water environment. A minilogger attached to the headline recorded water temperature and depth throughout each tow. Only two cod caught throughout the survey were of suitable size (>25 cm) and condition for internal tagging with data storage tags (DSTs). These fish were tagged with the Star-Oddi Centi DST and released within 5 km of the area caught. Juvenile gadoids (haddock and whiting) were tagged externally only with Floy® T-bar anchor tags. Fin clips were taken from all tagged fish for genetic analysis.

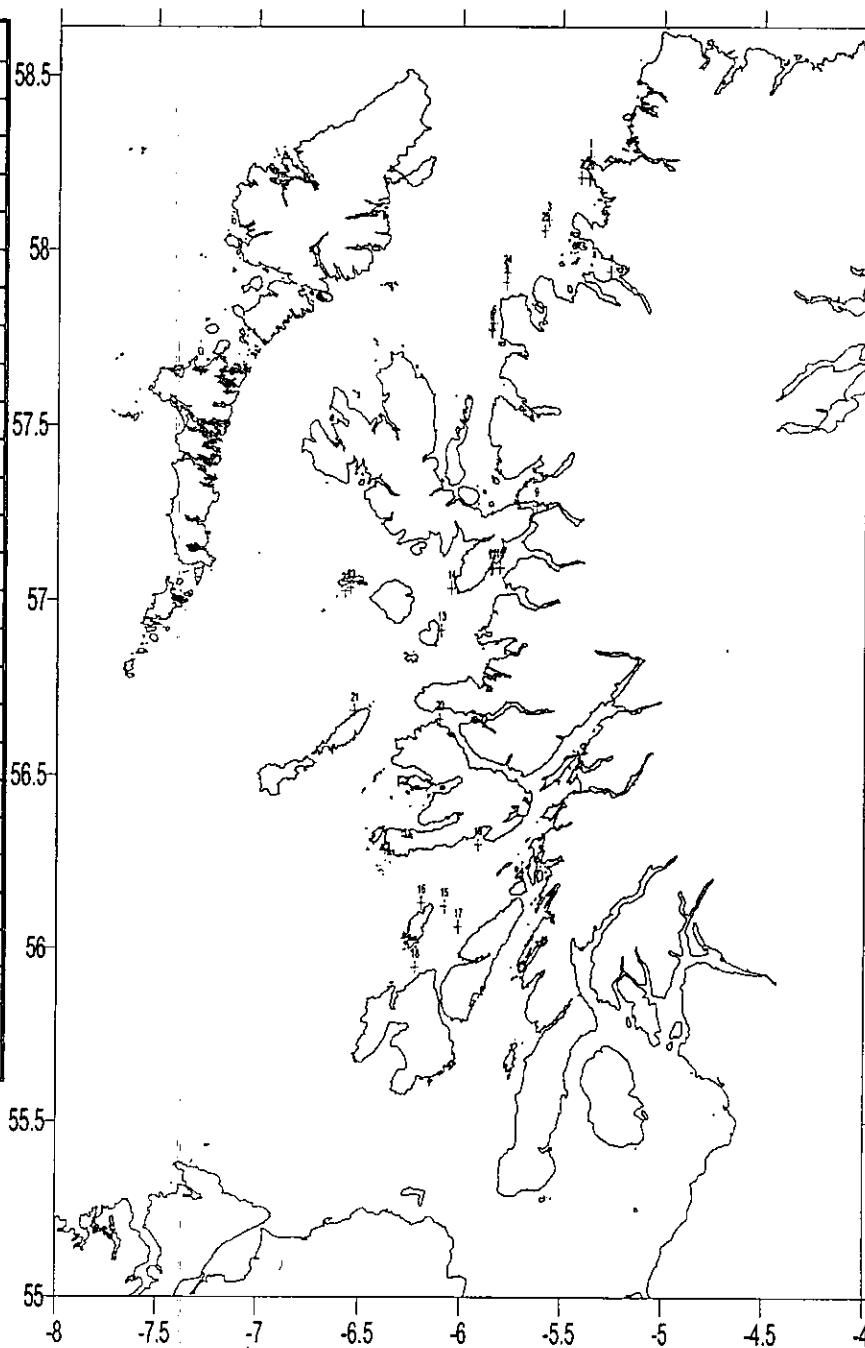
Biological Sampling

Morphological measurements were taken on all 0-group cod caught ($N=32$). Samples of gill tissue were fixed in absolute ethanol for genetic studies, sagittal otoliths removed with plastic forceps for otolith microchemistry and age analysis and lapillar otoliths removed for future

microstructure analysis. Juvenile haddock (N=100) and whiting (N=200) were sampled in the South Minch for various morphological parameters and genetics (skin tissue in ethanol) for work to be conducted as part of MF0464.

Trawl Stations

Haul	Decimal degrees	
	Lat	Long
1	58.2583	-5.3417
2	58.2017	-5.3812
3	58.0937	-5.5778
4	57.9448	-5.3012
5	57.9323	-5.7787
6	57.8115	-5.8497
7	57.7847	-5.8582
8	57.7830	-5.8575
9	57.2683	-5.6067
10	57.0222	-5.8202
11	57.0745	-5.8723
12	57.0777	-5.8730
13	56.9348	-6.1068
14	57.0532	-6.0493
15	56.0975	-6.0847
16	56.0918	-6.2327
17	56.0570	-6.0447
18	55.9305	-6.2605
19	56.3230	-5.9043
20	56.6478	-6.0888
21	56.6982	-6.4962
22	57.0437	-6.5497
23	57.0342	-6.5608
24	57.9095	-5.7835
25	58.0195	-5.5913
26	58.1912	-5.3530



J Kinnear
7 November 2003

Seen in draft: A Simpson, OIC *Clupea*

Table 1

Species	Pennan	Oldany	Annat Bay	Loch Inver	Rubha Coigach	Loch Alsh	Kyles of Sleat	Eigg
Saithe				58				
Plaice		51		80				
Common Dab	116	29		118				
Cod								
Haddock		56		180			210	
Whiting		58	160		160	190		
Hake								
Gurnard								
Red Band Fish								
Long Rough Dab								
Bib								
Poor Cod								
Norway Pout								
Species	Colonsay	Loch Buie	Bloody Bay	West Coll	Canna	Rhuba Reidh	Jambo	Moray Firth
Saithe	1							
Plaice		3	10	86	3			
Common Dab	150	10	89	73	16			10
Cod								
Haddock	1		40		40	165	60	
Whiting	150	150	150		150			
Hake		3			150			
Gurnard	80				11			
Red Band Fish			10					
Long Rough Dab			6					
Bib	3							
Poor Cod	150	80	50	150	150			
Norway Pout		150			40			

Table 2

Area	Pennan	Annat Bay	Rubha Reidh	Eigg	Colonsay	Loch Buie	Bloody Bay	Canna	Jambo	Moray Firth
Species										
Cod	6		32							
Haddock	30	60	88	60	1		30	40	60	30
Whiting	6				90	60	60	20		
Hake						3				