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FRV *Clupea*

Cruise 1500C

REPORT

20 October - 6 November 2000

Personnel

J Kinnear	SOC	
P Copland		
E Hatfield		
D Bova		
J Drewery		
I Young	(Visitor)	29 October 2000 - 3 November 2000

Objectives

1. To sample fish using the BT 154 International gadoid trawl with 6 mm cod-end.
2. To use the modified 5 m beam trawl to sample bottom living species.
3. To carry out detailed acoustic surveys in selected sealochs using the Seabat 602 and RoxAnn.
4. To carry out grab sampling for benthic organisms and ground truthing RoxAnn.

Sea Lochs Surveyed

Loch Gairloch, Outer/Inner Loch Torridon, Loch Kishorn, Loch Duich, Loch Hourn and Loch Nevis.

Out-turn days:15-MO1T

Narrative

Clupea sailed from Fraserburgh at 1100 hours on Monday 23 October. P Copland travelled round with the ship to Gairloch, where the remainder of the scientific staff joined *Clupea* at 1400 hours on Tuesday 24th. Trials of the modified beam trawl were conducted in Loch Gairloch during the afternoon of the 24th. Westerly gales on the 25th and 26th prevented further work in Loch Gairloch. *Clupea* sailed for Inner loch Torridon on the morning of the 26th. Acoustic surveys were carried out in Inner and Outer lochs Torridon and Shieldaig using Seabat and RoxAnn. Grab samples were taken at selected locations. Beam trawling was carried out with limited success due to the large numbers of creels in each of the lochs. *Clupea* left Torridon on the 28th and headed for Loch Kishorn. Creels were again a problem and prevented the shooting of the Pelagic trawl. However, the beam trawl was deployed where space allowed. *Clupea* docked at Kyle on the evening of the 28th. Severe gales for the next two days prevented any further work. I Young joined *Clupea* on the evening of the 29th.

Clupea sailed for Loch Duich on the 30th. Although creels were present in the loch there was sufficient space to deploy the Pelagic net successfully for the first time. The trawl and acoustic survey in Loch Duich, was completed by the evening of the 30th, before proceeding to Lochs Hourn and Nevis where similar surveys were carried out from 31 October - 3 November before *Clupea* returned to Kyle where the scientific staff disembarked on the 4th and *Clupea* returned to Fraserburgh for unloading on the 6th.

Results

Areas covered by the RoxAnn and Seabat survey are shown on the charts with trawl and grab positions also indicated. Fourteen beam trawls and 10 trawls with the PT154 were completed. Where possible each haul was of 30 minutes duration. Haul details are shown in Table 1. Total numbers of main species captured are shown in Table 2. All hauls were sampled according to standing instructions.

The most common species caught when fishing in midwater layers in Lochs Duich, Hourn and Nevis were Sprat and Euphausids. The Seabat also identified similar marks in Lochs Torridon, Shieldaig and Kishorn, but due to the proximity of creels it was not possible to identify species type by trawling. The Ghost shrimp *Pasiphea* sp. was also present, being found predominantly in the bottom 10 metres. When fished close to the bottom the PT 154 captured mainly small Whiting (9-23 cm), Pout (8-17 cm) and Herring (9-15 cm). One haul (PT8) shot at the entrance to Loch Nevis contained significant numbers of small Haddock (9-23 cm).

Samples of Herring and Sprat were retained for DNA analysis. Herring were examined for sex (43% females) and maturity (all stage 1). Samples were also examined for Ichthyophonus - none was found. Stomach contents examined showed that Euphausids were the major food source for the Whiting, Haddock and Pout. All the Herring and Sprat samples examined had empty stomachs.

Discussion

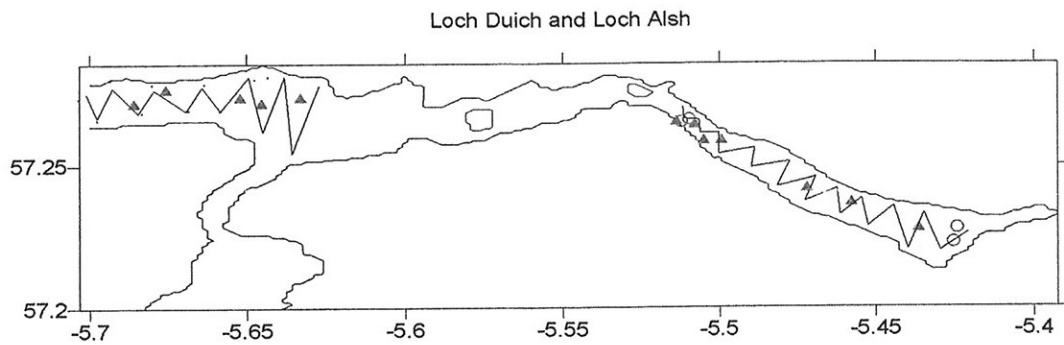
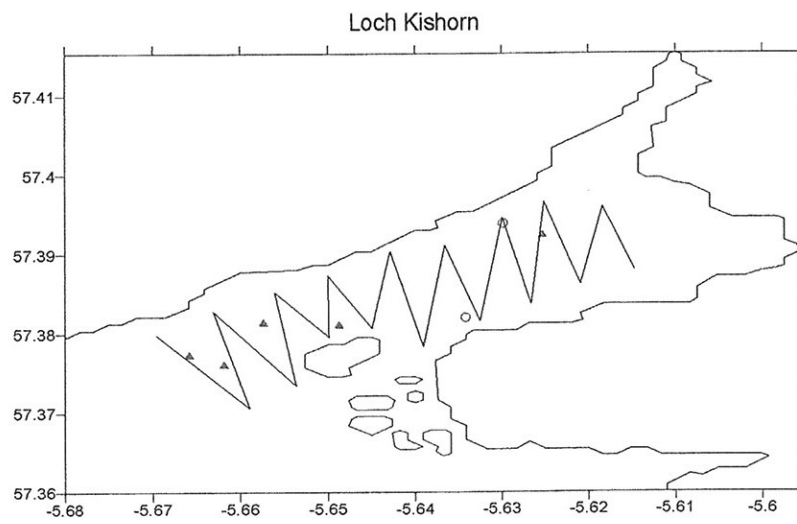
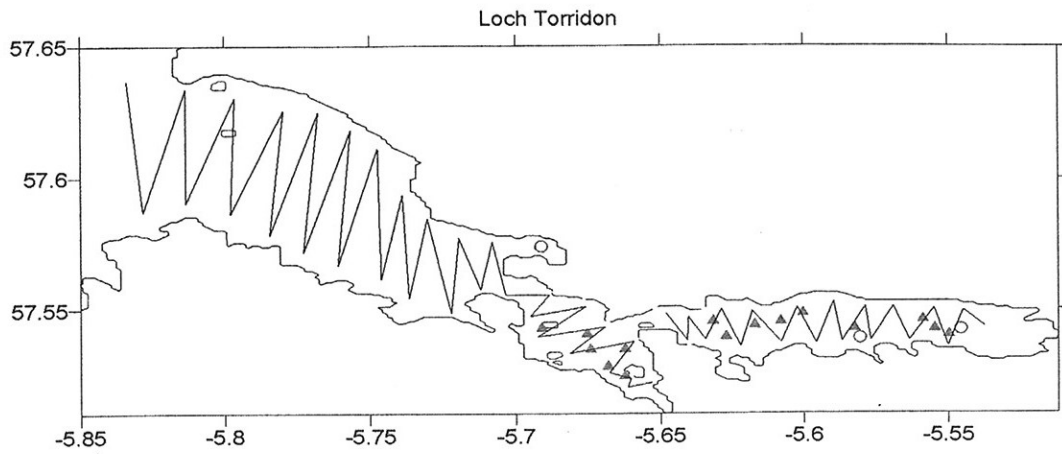
This trip was designed to test the feasibility of sampling fish effectively in sea lochs where creels pose a major problem in gear deployment. The main difficulty in all the lochs is defining the direction in which the fleets of creels have been shot. It will be important in the future to communicate directly with the fishermen involved before the start of any trip to ascertain clear areas for trawling, minimising the risk of fouling creel lines.

It was found that modifications to the ground gear and belly of the PT154 are also necessary to enable this net to be towed very close to the bottom with reduced risk of damage to the gear.

The use of a standard bottom trawl increases the possibility of creel entanglement because the doors are in full contact with the seabed. Using Pelagic doors and Pelagic trawl rigged for bottom contact will reduce the risk of entanglement.

J Kinnear
13 December 2000

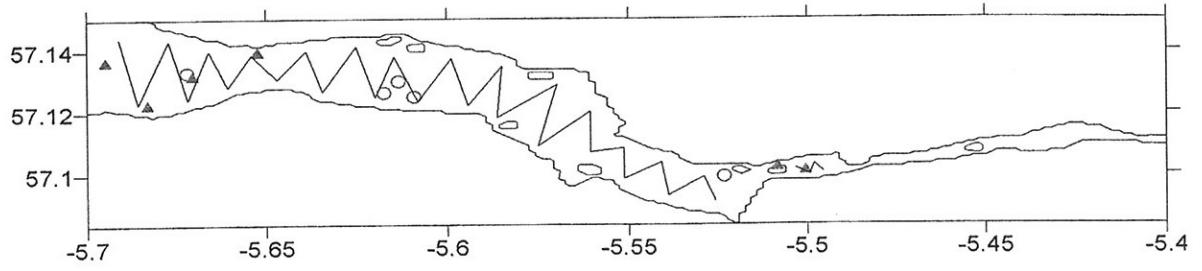
Seen in draft: A Simpson, OIC



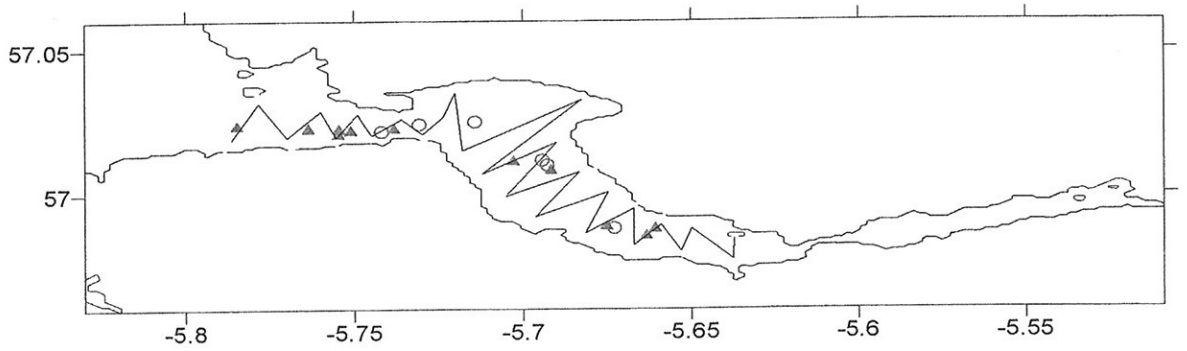
Seabat and Roxan transects completed in Loch Torridon, Kishorn, Alsh and Duich

- ▲ Grab samples
- Trawls

Loch Hourn



Loch Nevis



Seabat and Roxan transects completed in Lochs Duich and Nevis.

▲ Grab samples ○ Trawls

TABLE 1 Beam and Pelagic trawl positions

Area	Haul No	Shot		Haul		Haul duration minutes
		Lat	Long	Lat	Long	
Gairloch	B1	57.7255	5.7238	57.7270	5.7575	30
	B2	57.7255	5.7238	57.7270	5.7575	30
Torridon	B3	57.5422	5.5457	57.5433	5.5620	25
	B4	57.5388	5.5805	57.5423	5.5668	15
	B5	57.5738	5.6912	57.5775	5.7093	20
Applecross	B6	57.4348	5.8333	57.4158	5.8353	30
Kishorn	B7	57.3938	5.6298	57.3878	5.6490	20
L.Duich	B8	57.3820	5.6342	57.3820	5.6578	30
	PT1	57.2657	5.5095	57.2470	5.4802	35
	B9	57.2273	5.4242	57.2250	5.4252	30
	B10	57.2223	5.4253	57.2238	5.4455	30
	B11	57.2648	5.5120	57.2532	5.4968	15
L.Hourn	PT2	57.1330	5.6720	57.1290	5.6213	13
	PT3	57.1300	5.6133	57.1353	5.6540	35
	B12	57.0992	5.5232	57.0947	5.5452	30
	B13	57.1000	5.6092	57.1000	5.6223	20
	B14	57.1263	5.6173	57.1330	5.6400	25
L.Nevis	PT4	57.0100	5.6928	57.0243	5.7298	40
	PT5	57.0217	5.7417	57.0235	5.7267	30
	PT6	56.9882	5.6730	57.0063	5.6905	31
	PT7	57.0117	5.6943	56.9877	5.6738	33
	PT8	57.0250	5.7142	57.0206	5.7488	30
	PT9	57.0242	5.7305	57.0213	5.7543	31
L.Hourn	PT10	57.1245	5.5960	57.1342	5.6382	40

B = Beam trawl PT = Pelagic trawl

Area	Haul No	Cod	Haddock	Whiting	Saithe	M.poutassou	T.minutus	T. esmarki
Gairloch	B1	1						
	B2	3						
Torridon	B3							
	B4							
	B5						1	
Applecross	B6							1
Kishorn	B7							
L.Duich	B8							1
	PT1							
	B9							
	B10							
L.Hourn	PT2			131	1			187
	PT3			65				40
	B12							1
	B13		Foul haul					
	B14		Foul haul					
L.Nevis	PT4		1					
	PT5			59				1
	PT6			383				54
	PT7							
	PT8		185	208		31	371	76
	PT9							
L.Hourn	PT10		6	845		3	334	207
Area	Haul No	Common Dab	Long Rough Dab	Plaice	Lemon Sole		Herring	Sprat
Gairloch	B1	5		4				
	B2	26		34	1			
Torridon	B3	5	1	1				
	B4	4						
	B5	26		2				
Applecross	B6	1						
Kishorn	B7	1		1				
	B8	1		1				
L.Duich	PT1						568	17254
	B9							
	B10	1		5				
	B11			1				
L.Hourn	PT2						na	na
	PT3		1				190	40151
	B12	1						
	B13							
	B14							
L.Nevis	PT4						77	22625
	PT5							
	PT6						527	
	PT7						23	2375
	PT8							76
	PT9						129	69462
L.Hourn	PT10							

Table 2 Total number of most common species captured by area