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FRV *Clupea*

Cruise 0201C

REPORT

26 January - 8 February 2001

Personnel

J Kinnear	SOC
E Hatfield	
P Copland	
D Bova	
J Drewery	
J Martin	

Objectives

1. To sample fish and benthos in designated sea lochs using the BT154 trawl and 2.8 m beam trawl.
2. To carry out detailed acoustic surveys in the lochs using Seabat 602 and RoxAnn.
3. To carry out grab sampling for benthic organisms and ground truthing RoxAnn.
4. To carry out plankton and CTD sampling at selected stations within the lochs.

Sea lochs surveyed: Loch Nevis, Loch Hourn, Loch Duich, Loch Alsh and Loch Kishorn.

Out-turn days: 14 MO1T

Narrative

Clupea sailed from Fraserburgh at 2130 hours on 26 January 2001. P Copland travelled with the ship to Kyle where the remainder of the scientific staff joined at 2030 hours on the 27th. *Clupea* then steamed to Balmacara Bay to anchor, sailing for Loch Hourn the following morning. Trawling and surveying were undertaken in Loch Hourn until the evening of the 30th when all the stations were completed. *Clupea* then steamed to Loch Nevis where she anchored for the night. Trawling and surveying continued in Loch Nevis and were successfully completed by the evening of the 2nd. *Clupea* then steamed to Kyle for the night, sailing to Loch Duich the next day, where the trawling and survey continued. A problem with the main engine meant that *Clupea* had to return to Kyle in the early evening to pick up a spare part. After repairs *Clupea* left Kyle on the 4th and steamed to Loch Kishorn to continue the survey. Deteriorating weather conditions and poor visibility curtailed operations. *Clupea* anchored at 2030 hours in Loch Kishorn. The following morning continuing poor weather resulted in a change of plan and *Clupea* steamed back to Loch Duich to complete that part of the survey, returning to Kyle for the evening. The following morning a further attempt was made to complete the Loch Kishorn survey but continuing poor weather prevented any RoxAnn or trawling .

RoxAnn transects were carried out in Loch Alsh until eventually the severe weather forced abandonment of the transects and *Clupea* returned to Kyle. Scientific staff disembarked on 7 February and *Clupea* returned to Fraserburgh.

Results

Areas covered by the RoxAnn and seabat surveys are shown on the chart with trawl and grab positions also indicated. The RoxAnn transects were designed to complement the work already completed during the October/November 2000 survey.

Where possible hauls were of 30 minutes duration. In total seven Pelagic, nine demersal and eight beam trawls were carried out. Forty grab stations were undertaken for sediment analysis and ground truthing RoxAnn, 24 CTD stations and seven plankton stations were also sampled. The thermosalinograph was run continuosly throughout the working day.

The size range of the most commonly occurring species (herring sprat, whiting, pout and poor cod) are shown for each loch in graphs 1-5. Euphausids were also present in large concentrations, primarily associated with sprat in 60-80 m depth. Haddock were caught in significant numbers in only one haul in Loch Hourn, ranging in size from 14-22 cm, and averaging 18 cm. A detailed species list for each loch is shown in Tables 1 and 2.

Samples of herring were retained for DNA analysis. Herring were also examined for sex, maturity and Icthyophonus infection. Female herring accounted for 45% of the catch. All herring were stage 1 maturity and no Icthyophonus was found.

Stomach samples from herring, whiting and saithe were taken and preserved for analysis. It is interesting to note that saithe captured near a fish farm contained only fish pellets in their stomachs. All hauls were sampled according to standing instructions and otiliths taken where necessary.

Gear

The PT154 net was used very successfully as both a pelagic trawl and a demersal trawl capable of fishing for *Nephrops*. The net was modified by replacing the two wing weights with a fully rubbered chain ground gear of equivalent weight. The footrope was attached to this additional ground gear by adjustable strops every metre. Even when fished hard on the seabed the gear remained stable, successfully capturing *Nephrops norvegicus* down to 12 mm carapace length and *Calocaris macandreae*.

Creels in the sealochs are still a major problem when trawling, however before the trip began every effort was made to contact as many fishermen as possible who creeled in the lochs prior to commencing work. This enabled trawling to be conducted in areas that would otherwise have been avoided due to the risk of creel damage. Gaining a knowledge of the shooting patterns employed by the fishermen made a significant difference to the success of the trip and this type of cooperation should be encouraged.

J Kinnear
16 March 2001

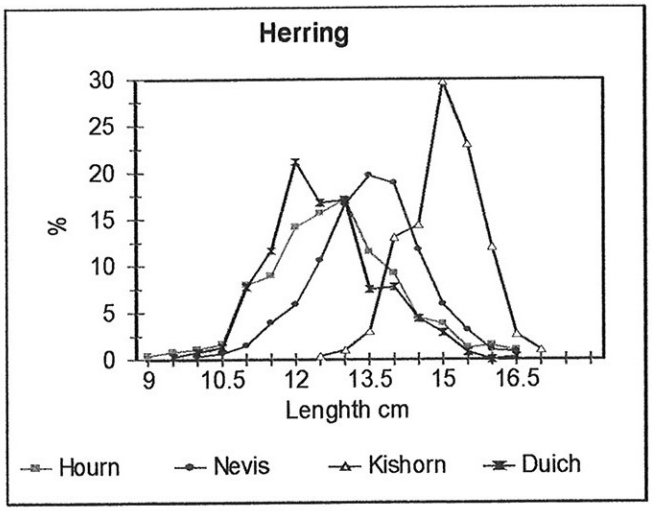
Seen in draft: A Simpson, OIC

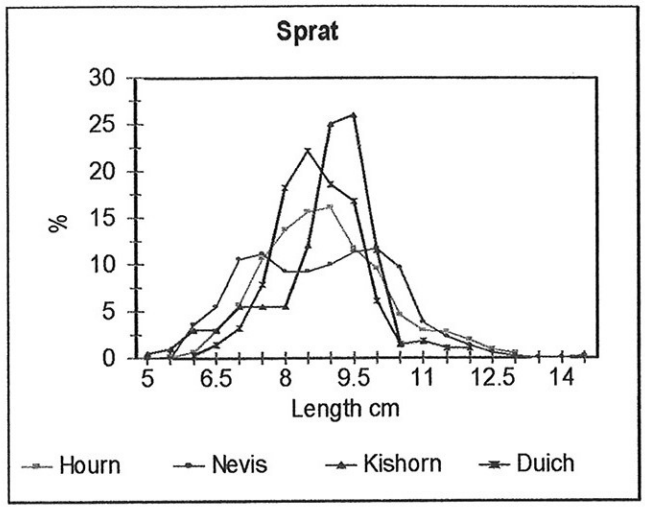
Species	Loch Hourn	Loch Nevis	Loch Kishorn	Loch Duich
Fish				
Herring (*Clupea Harengus*)	*	*	*	*
Sprat (*Spratus spratus*)	*	*	*	*
Whiting (*Merlangius merlangus*)	*	*	*	*
Haddock (*Melanogrammus aeglefinus*)	*	*	*	*
Norway Pout (*Trisopterus esmarkii*)	*	*	*	*
Silvery Pout (*Gadiculus argentus*)	*			
Poor Cod (*Trisopterus minutus*)	*	*	*	*
Cod (*Gadus morhua*)	*			*
Hake (*Merluccius merluccius*)	*	*		
Pearlside (*Maurolicus muelleri*)	*	*	*	*
Argentine (*Argentina sphyraena*)		*		
Saithe (*Pollachius virens*)		*		
Common Dab (*Limanda limanda*)	*	*	*	*
Long Rough Dab (*Hippoglossioides platessoides*)	*	*		*
Plaice (*Pleuronectes platessa*)	*	*		*
Dover sole (*Solea solea*)				*
Lemon Sole (*Microstomus kitt*)	*			*
Thickback Sole (*Microchirus variegatus*)	*	*		
Solenette (*Buglossidium luteum*)	*			
Witch (*Glyptocephalus cynoglossus*)	*	*		*
Topknot (*Zeugopterus punctatus*)	*			
Brill (*Scophthalmus rhombus*)		*		
Flounder (*Platichthys flesus*)		*		
Scad / Horse Mackerel (*Trachurus trachurus*)	*			
Blue Whiting (*Micromesistius poutassou*)	*		*	*
Sandeel (*Ammodytes Tobianus*)	*			
Butterfish (*Pholis gunnellus*)	*			
Sand Goby (*Pomatoschistus minutus*)		*		*
Common Goby (*Pomatoschistus microps*)		*		
John Dory (*Zeus faber*)	*	*		*
Grey Guarnard (*Eutrigla gurnardus*)	*	*	*	*
Dragonet (*Callionymus lyra*)	*	*		*
Spotted Dragonet (*Callionymus maculatus*)				*
Bull Rout (*Myoxocephalus scorpius*)	*			
Rock Cook (*Centrolabrus exoletus*)	*			
Five-bearded Rockling (*Ciliata mustela*)	*			
Great Pipefish (*Syngnathus acus*)	*			
Grey Skate (*Raja batis*)				*
Thornback Ray (*Raja clavata*)	*	*		*
Lesser Spotted Dogfish (*Scyliohinus caniculus*)	*	*		*
Spurdog (*Squalus acanthias*)	*		*	

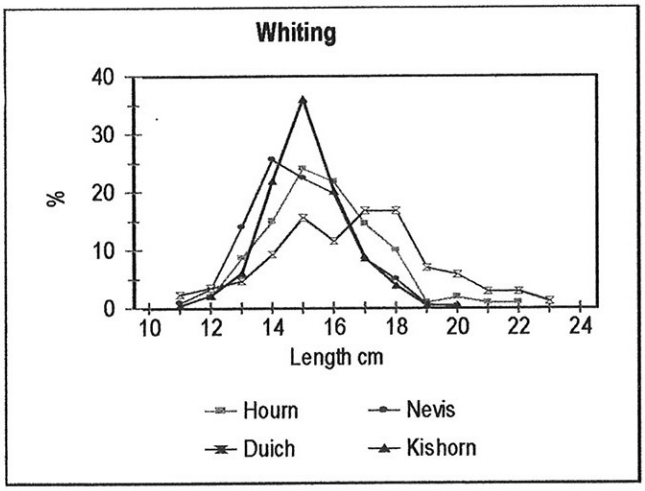
Table 1 **Fish species list by loch**

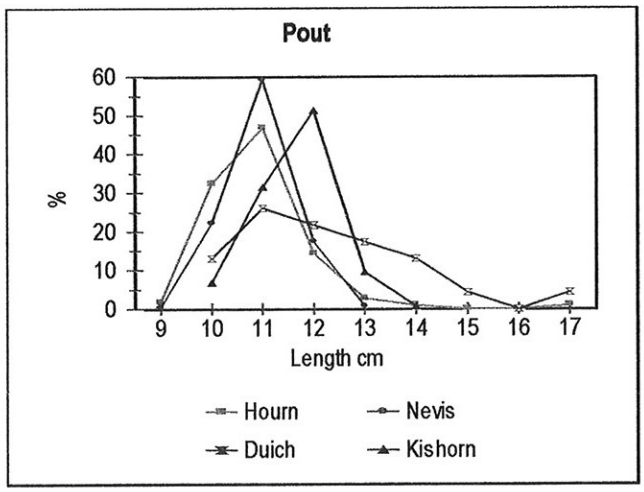
Species	Loch Hourn	Loch Nevis	Loch Kishorn	Loch Duich
Crusteaceans				
Nephrops (*Nephrops norvegicus*)	*	*	*	*
Euphausids	*	*	*	*
Pasiphea spp.	*	*	*	*
Calocaris macandreae	*			*
Shrimp (*Dichelopandalus bonnieri)*	*	*		*
Common shrimp (*Crangon crangon*)				*
Common prawn (*Palaeomon serratus*)	*	*		
Squatt lobster (*Munida rugosa*)	*	*		*
Squatt lobster (*Galathea dispersa*)	*	*		
Green crab (*Carcinus maenas*)	*			*
Brown crab (*Cancer pagurus*)	*	*		*
Velvet crab (*Necora puber*)	*			
Harbour crab (*Liocarcinus depurator*)	*	*		
Harbour carb (*Liocarcinus Holastus*)				*
Wrinkled swimming crab (*Liocarcinus corrugatus*)	*			
Hermit crab (*Pagurus bernhardus*)	*			*
Porcelain crab (*Psidia longicornis*)	*			
Spider crab (*Hyas coractus*)	*			
Long-legged spider crab *(Macropodia rostrata)*	*	*		
Great spider crab *(Hyas araneus*)	*			
Scorpion spider crab (*Inachus dorsettensis*)				*
Echinoderms				
Common starfish (*Asteria rubens*)	*			*
Brittle star (*Ophiura ophiura*)	*			*
Brittle star (*Ophiura robusta*)	*			*
Brittle star *(Asteronyx loveni)*	*			
Brittle star (*Amphiura brachiata*)	*			*
Brittle star (*Ophiocomina nigra*)				*
Sun star (*Crossaster papposus*)	*	*		*
Cushion star (*Asterina gibbosa*)	*			*
Flattened cushion star (*Anseropoda placenta*)				*
Sea urchin (*Echinus esculentus*)	*			*
Sea potatoe (*Echinocardium cordatum*)	*			
Sea potatoe (*Brissopsis lyrifera*)	*	*		*
Bivalves and Molluscs				
Icelandic cyprine *(Arctica islandica)*	*	*		*
Queen scallop (*Aequipecten opercularis*)	*	*		*
Great scallop (*Pecten maximus*)		*		
Blue rayed limpet (*Helcion pellucidum*)	*			
Hunch-back scallop (*Chlamys distorta*)	*			
Cowrie (*Trivia monacha*)	*			
Red whelk (*Neptunea antiqua*)		*		*
Squid (*Todaropsis oblanae*)	*			
Squid *(Alloteuthis subulata)*	*			
Curled octopus (*Eledon cirrhosa*)				*
Cuttlefish (*Rossia macrosoma*)		*		*
Other invertebrates				
Sea pen (*Funiculina quadrangularis*)	*	*		
Sea mouse (*Aphroditidae aculeata*)				*
Tube anemone (*Cerianthus lloydii*)				*
Mud anemone	*			
Ascidians (2 species)	*			
Sabellid worms	*			*
Ragworms	*			
Sipunculid worms				*

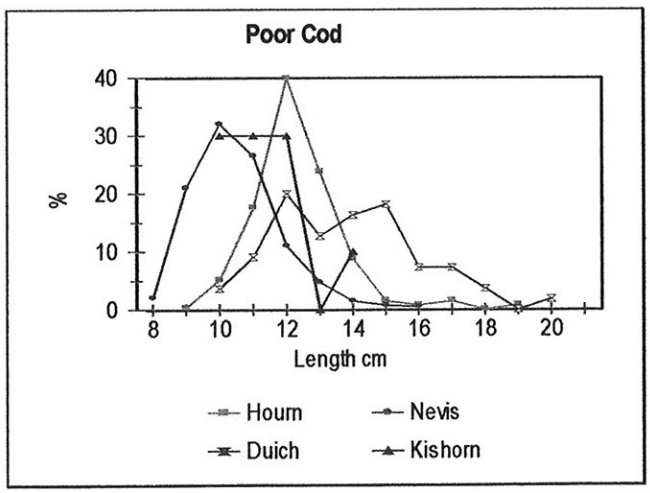
Table 2 Invertebrate species list by loch



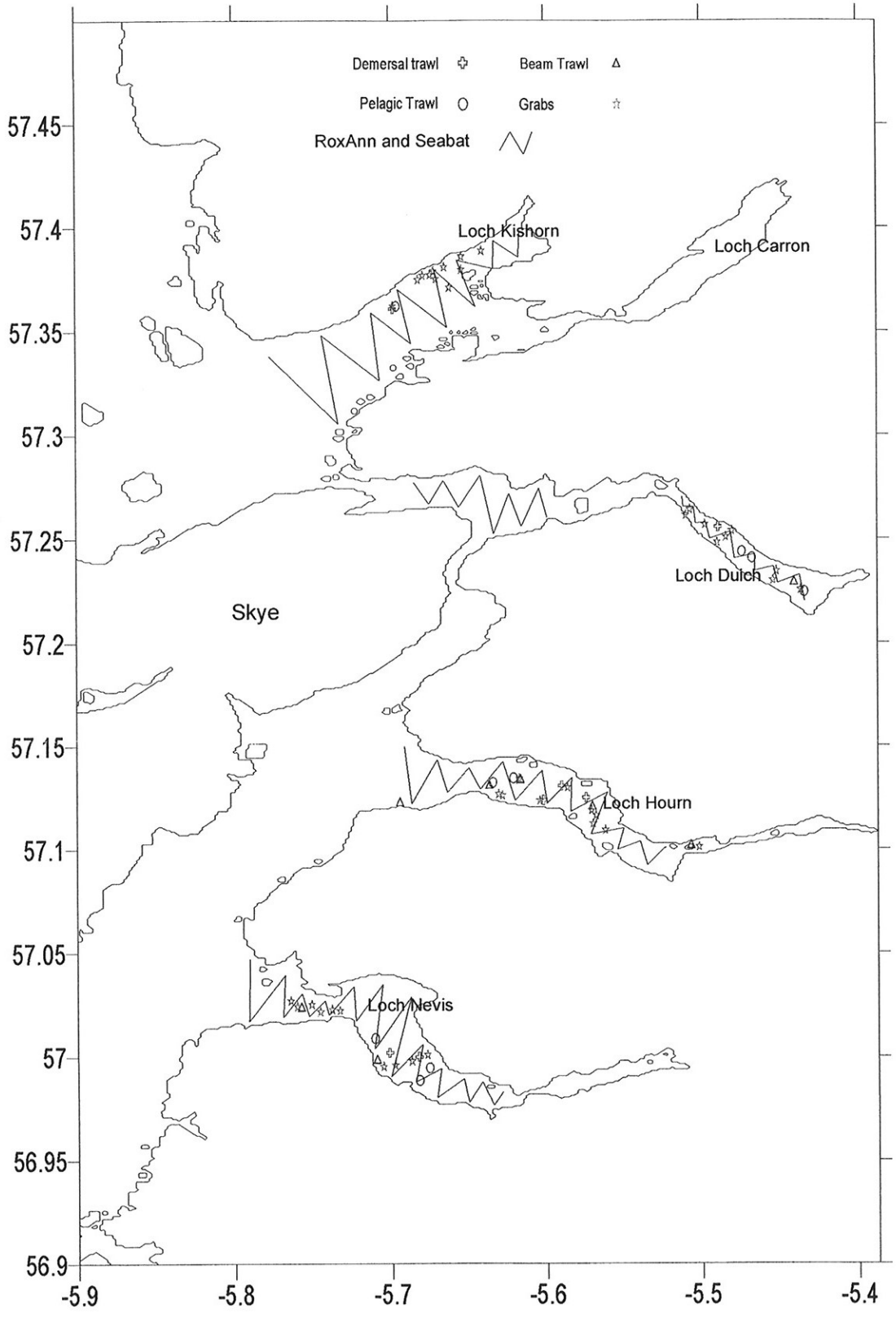








Graphs 1-5 Length composition of the major fish species by loch



Survey positions - RoxAnn/Seabat, Trawl and Grab