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FRV *Clupea*

Cruise 1804C

REPORT

7-20 December 2004

Ports

Loading: Fraserburgh 3 December 2004

Sailing: Fraserburgh 7 December 2004

Unloading: Fraserburgh 20 December 2004

Personnel

A Weetman OIC

C Shand

R Campbell

J Adey (University of Glasgow) 12-14 December 2004

Out turn days: 14 - RV0412

Gear

50 mm prawn trawl 149B (plus Scanmar)

Day Grab

Towed TV sledge, drop frame, umbilical towing cable and cameras (plus back up)

Framed creel and appropriate video equipment

Prawn sorting table

Objectives

1. To obtain estimates of distribution and abundance of *Nephrops* in Loch Torridon and the Inner Sound areas, as part of the Torridon project.
2. To collect sediment samples at each station.
3. To use trawl caught samples of *Nephrops* to examine biological features at different sites throughout the survey areas.
4. To establish the suitability of using video techniques to ascertain crab and lobster stock abundance's, along the North West Coast of mainland Scotland.
5. To record the habits of *Nephrops* around a creel, *in situ*.

Narrative

On 7 December 2004 the weather precluded travelling to the West Coast and *Clupea* sailed from Fraserburgh to work on crab grounds in the Moray Firth. Using the drop frame, which requires relatively calm conditions to work effectively, several suitable sites were identified.

Four areas were visited with only three being surveyed and the fourth having to be abandoned due to the sea conditions. With strong northerly winds forecast, all local anchorages would be too exposed and so the vessel returned to Fraserburgh. The wind dropped slightly on 8 December, but was still from the north, and so *Clupea* worked in a westerly direction through the Moray Firth, continuing to study crab grounds. Some areas were traditional creeling grounds and some of the sites had been visited on previous cruises. The strata varied from sand and gravel to boulder fields, which especially suited the drop frame approach. A total of eight sites were surveyed on 8 December, and the vessel anchored in Cullen Bay for the night. Although there were light winds on 9 December, reports were coming through of difficult sea conditions in the Pentland Firth and gales in Loch Torridon, so work continued in the Moray Firth. Of the ten sites covered, this included high density velvet crab grounds and freshly dredged scallop tows, as well as brown crab habitat. The forecast and sea conditions looked more favourable for the next couple of days so *Clupea* left Speybay on 11 December heading north to cover crab grounds off Wick, which could also be surveyed in a population study being coordinated by Millport Research Station. Working this far north would reduce travelling time once the Pentland Firth became navigable again. After surveying seven sites, *Clupea* anchored in Sinclair Bay for the night. Following the completion of four TV stations off Noss Head *Clupea* set off for the West Coast, arriving in the early hours of the morning on 12 December at Gairloch. Later that morning, Johnathon Adey arrived on board, to observe the utilisation of a camera mounted on to a frame which would record the reactions of *Nephrops* on a baited creel whilst *in situ*. Once this frame was equipped and ready for deployment, a suitable site was found in Loch Sheildaig where it was successfully lowered to the seabed. Now that the vessel had reached the West Coast the priority was to examine *Nephrops* grounds. Five TV tows were completed before returning to recover the creel frame, and then *Clupea* headed back to Gairloch due to a bad forecast. Leaving Gairloch on 13 December, the possibility of working in the Inner Sound was explored, but the sea proved to be too rough to allow work to be carried out. In Upper Loch Torridon, the creel frame was deployed, and ten suitable *Nephrops* grounds were surveyed, before collecting the creel frame. As the day progressed, the weather deteriorated and more vessels entered the loch to take shelter but continued fishing with creels. This restricted the area in which *Clupea* could safely work, and as severe gales were forecast, *Clupea* set off for Kyle harbour, where a more sheltered berth was arranged, arriving there at 1900. Being located at Kyle allowed work to be carried out in the nearby lochs, which offered some protection from North Westerly winds. The surrounding lochs have suitable *Nephrops*' habitat which had been surveyed in previous years. On 14 December the weather made conditions too difficult to work in and Johnathon Adey left the vessel to return home. On the morning of 15 December two areas were surveyed before deploying the creel frame using advice from a local creel fisherman. Whilst the creel frame was filming *in situ*, five further sites were surveyed in Loch Alsh, and four in Loch Duich. The creel frame was recovered before returning to Kyle, where the vessel was tied up throughout the following day, due to force 10 gales. The creel frame was deployed in Loch Duich in the morning of 17 December, and collected mid afternoon. In the meantime, five *Nephrops* TV sites were surveyed before *Clupea* returned to Kyle, where the scientific equipment was dismantled and cleaned. Scientific staff returned to Aberdeen by train on the morning of 18 December, and *Clupea* arrived back in Fraserburgh on 19 December.

Results

The locations of the TV stations are shown on the tables below. Although the Inner Sound was not covered at this time due to poor weather conditions, it is planned to incorporate this area in the *Nephrops* TV cruises in the summer of 2005. However, the data gathered in Loch Duich and Loch Alsh will be of great interest, and further develop the picture of distribution and abundance in that area. The video recordings of *Nephrops*' burrow complexes have been verified, with the results yet to be analysed. Sediment samples were collected at all suitable sites.

Due to the areas the vessel was working in, no suitable or safe *Nephrops* trawl sites could be located on this occasion.

Although crab grounds on the East Coast were surveyed instead of the intended West Coast (due to the weather), the equipment and techniques are the same. With many brown and velvet crabs being observed in their natural habitat, this appears to be a promising method in providing crab stock abundance estimates. The footage gathered off the coast around Wick, along with previous years' data, will be of great interest and prove useful to the Marine Research Station at Millport.

Three successful deployments of the creel frame were made, and various fauna were observed. Using this equipment, this method of recording animal interactions and their reactions to a creel shows a lot of promise.

A series of 134 still images were taken using a Hassleblad camera, showing various life forms, sea bed formations and *Nephrops*' burrow complexes. The images of burrows will be used both for training purposes and to supply a team of image analysis programmers with raw data. Details on the location of each image were recorded.

A Weetman
21 March 2005

Positions of TV Stations, Clupea December 2004

Moray Firth Crab TV Survey

TV Station No.	Latitude	Longitude
CMF0401	57 43.18N	02 00.15W
CMF0402	57 43.02N	02 04.16W
CMF0403	57 42.52N	02 03.80W
CMF0404	57 43.14N	02 10.54W
CMF0405	57 43.64N	02 17.88W
CMF0406	57 43.00N	02 18.38W
CMF0407	57 41.16N	02 20.98W
CMF0408	57 44.33N	02 26.80W
CMF0409	57 42.24N	02 27.74W
CMF0410	57 41.20N	02 28.66W
CMF0411	57 41.93N	02 37.25W
CMF0412	57 42.78N	02 53.33W
CMF0413	57 45.17N	02 54.65W
CMF0414	57 45.15N	02 56.79W
CMF0415	57 47.15N	02 57.98W
CMF0416	57 47.38N	02 58.42W
CMF0417	57 47.45N	02 58.08W
CMF0418	57 47.31N	02 59.21W
CMF0419	57 43.02N	03 04.87W
CMF0420	57 42.41N	03 09.40W
CMF0421	57 43.17N	03 09.29W
CMF0422	58 22.82N	03 05.11W
CMF0423	58 29.18N	03 01.87W
CMF0424	58 30.67N	03 05.59W
CMF0425	58 31.90N	03 05.83W
CMF0426	58 32.78N	03 04.51W
CMF0427	58 33.79N	03 03.44W
CMF0428	58 34.65N	03 03.11W
CMF0429	58 26.57N	03 02.79W
CMF0430	58 25.69N	03 03.37W
CMF0431	58 27.72N	03 02.43W
CMF0432	58 27.82N	03 02.50W

Positions of TV Stations, Clupea December 2004

Loch Duich *Nephrops* TV Survey

TV Station No.	Latitude	Longitude
D0401	57 15.74N	05 30.47W
D0402	57 15.68N	05 30.23W
D0403	57 14.56N	05 28.63W
D0404	57 13.69N	05 26.94W
D0405	57 15.59N	05 29.97W
D0406	57 14.80N	05 28.74W
D0407	57 14.59N	05 28.46W
D0408	57 13.68N	05 26.15W
D0409	57 14.29N	05 28.22W

Positions of TV Stations, Clupea December 2004

Torridon *Nephrops* TV Survey

TV Station No.	Latitude	Longitude
T0401	57 32.86N	05 41.46W
T0402	57 32.53N	05 40.92W
T0403	57 21.89N	05 23.17W
T0404	57 32.50N	05 40.72W
T0405	57 32.82N	05 41.07W
T0406	57 32.62N	05 37.60W
T0407	57 32.52N	05 37.24W
T0408	57 32.93N	05 36.48W
T0409	57 32.91N	05 35.41W
T0410	57 32.88N	05 34.57W
T0411	57 32.62N	05 33.46W
T0412	57 32.50N	05 32.99W
T0413	57 32.52N	05 32.70W
T0414	57 32.62N	05 36.81W
T0415	57 32.59N	05 37.64W

Positions of TV Stations, Clupea December 2004

Loch Alsh *Nephrops* TV Survey

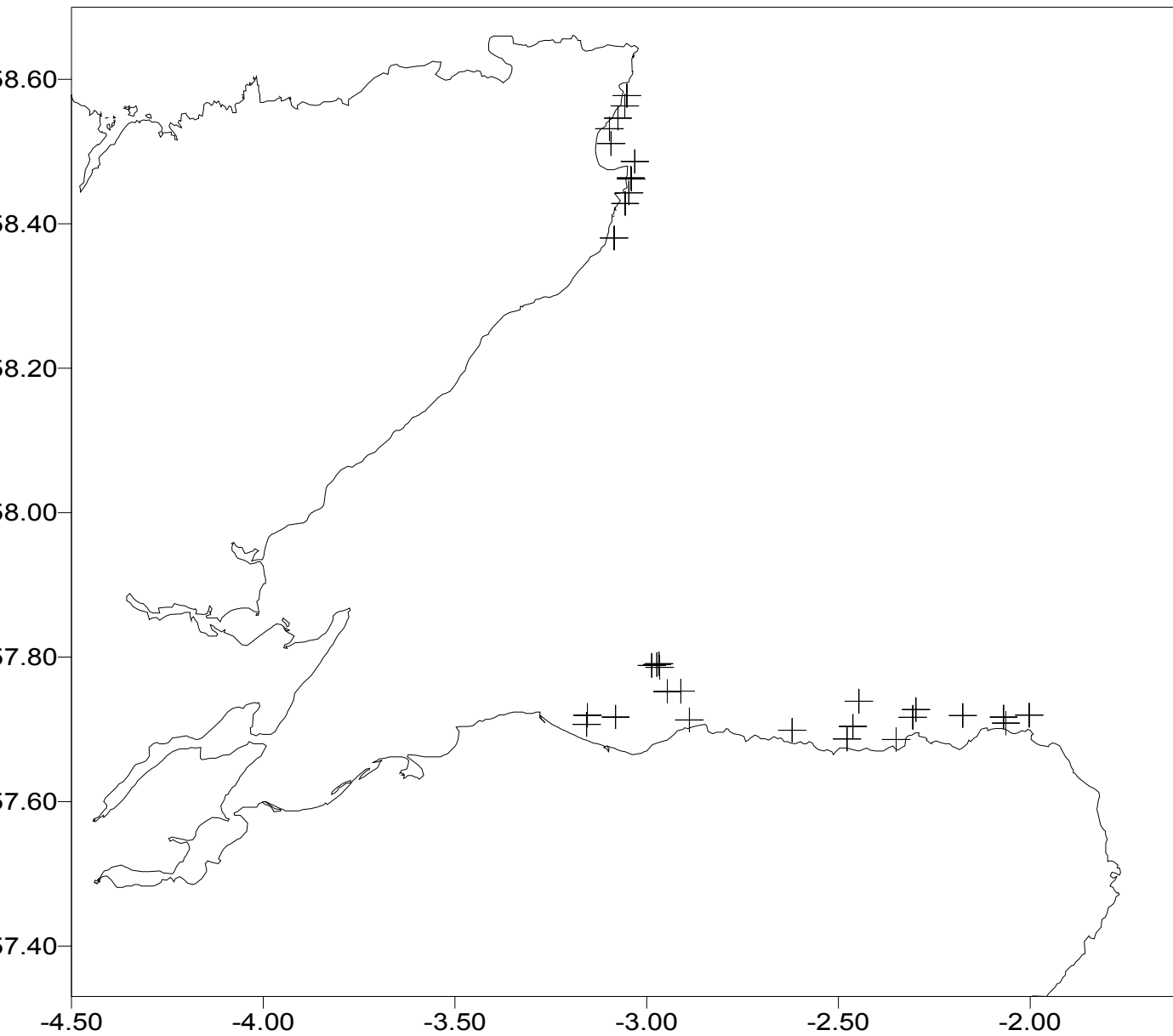
TV Station No.	Latitude	Longitude
A0401	57 16.37N	05 41.55W
A0402	57 16.06N	05 41.91W
A0403	57 16.31N	05 38.45W
A0404	57 15.93N	05 36.51W
A0405	57 16.17N	05 36.53W

Creel frame details, West Coast TV Survey, December 2004

Deployment No.	Date	Location	Depth	Latitude	Longitude
1	12-Dec-04	Loch Torridon	133m	57 32.771N	005 41.273W
2	15-Dec-04	Loch Alsh	101m	57 16.428N	005 41.491W
3	17-Dec-04	Loch Duich	96m	57 15.754N	005 30.391W

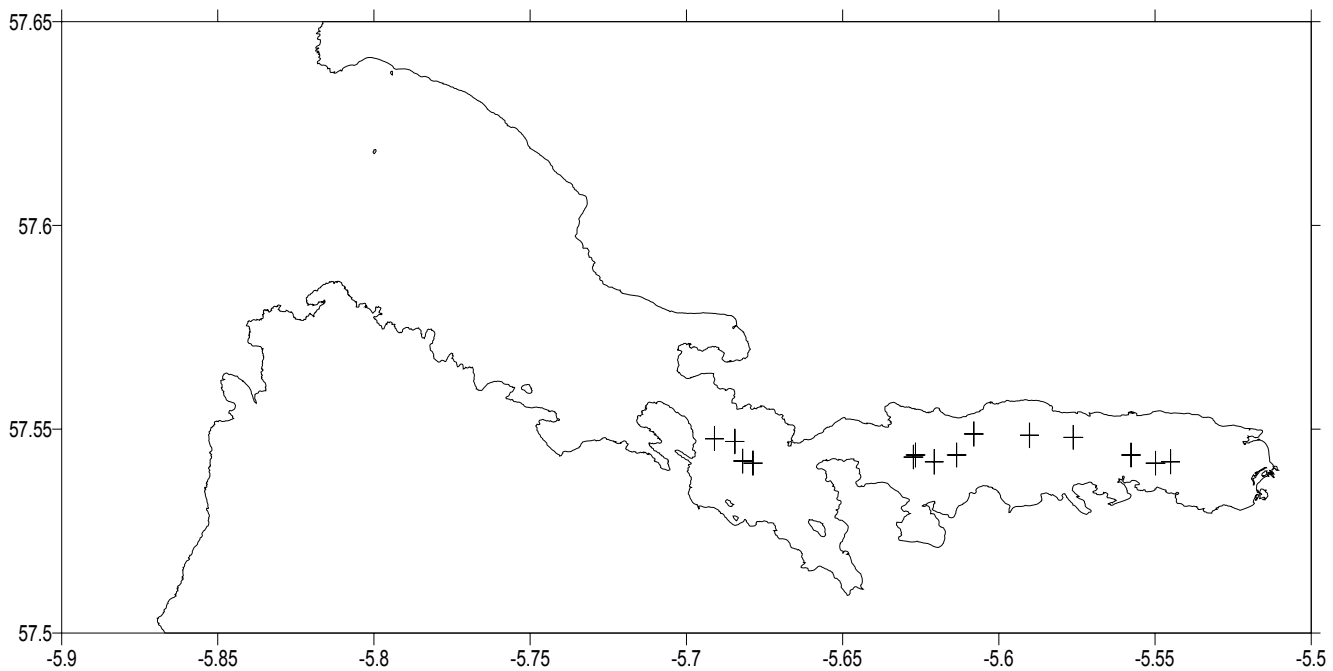
Moray Firth Crab Ground TV Survey

December 2004, Cruise 1804C/RV0412



Loch Torridon TV Sites

December 2004, Cruise 1804C/RV0412



Loch Duich and Loch Alsh TV Survey Sites

December 2004 Cruise 1804C/RV0412

