R1/6

Not to be cited without prior reference to the Marine Laboratory, Aberdeen

FRV *Clupea*

Cruise 0108C

REPORT

7–21 January 2008

Ports

Loading: Fraserburgh
Unloading: Fraserburgh

Personnel

A Weetman (SIC)
C Shand
J Drewery
A Tait

Gear

50 mm prawn trawl BT 149B
Day grab and table
Towed TV sledge, umbilical towing cable and cameras (plus backup)
TV drop frame
Creel frame and associated equipment

Objectives

- Using underwater cameras, obtain estimates of the distribution and abundance of *Nephrops, Nephrops* burrows and other fauna in West Coast Sea Lochs and the Inner Sound area.

- Collect sediment samples at each station.

- Use trawl caught samples of *Nephrops* to examine biological features at different sites throughout the survey areas.

- Record benthic fauna interactions with a baited creel whilst *in-situ*.

- The TV survey will also be used to collect data on other benthic fauna.

Estimated Project Time: 15 Days MF01TA

Narrative

Scientific staff joined FRV *Clupea* in the morning of 7 January 2008. The vessel sailed later that day arriving off Loch Torridon at 1500 on the 8 January. However, due to a very poor short range weather forecast, it was decided to head for Kyle. The vessel arrived at Kyle pier at 1800, and remained there throughout the 9 January as a westerly force 11 storm passed over.

On 10 January, 3 stations were completed in Loch Alsh, and a further 6 in Loch Duich before heading south through the Sound of Sleat. One drop frame survey was carried out in the Sound before arriving at Loch na Dal on the East side of Skye, opposite the entrance to Loch Nevis. Before anchoring there for the evening, the creel cam frame was deployed.

The following morning the creel cam was recovered, only to find that the battery and recorder housing had suffered extensive damage. Due to the concerns that this raised about the reliability of the one remaining housing, it was decided not to use the creel cam until tests were carried out and extra protection was added to the housing once back at the Marine Laboratory. Work in Loch Nevis began just before 1100 at the head of the loch. Traveling west towards the mouth of the loch, 10 TV stations were successfully completed and a further two stations were abandoned due to zero visibility caused by trawler activity. Heading back into the Sound of Sleat, another station was attempted, but the ship's motion caused by the swell in the sea meant the footage was too poor to analyse accurately. Anchoring at Inverie Bay at the mouth of Loch Nevis provided over-night shelter from the northerly wind.

On the morning of 12 January, the swell had reduced, and the station in the Sound attempted the previous day was revisited. However the problem now was that the sea bed had been disturbed to such a degree that there was zero visibility. The vessel traveled north through the Sound of Sleat, and footage from a further six stations was collected. By midday, work began in Loch Hourn, where footage from 6 sites was recorded, before heading to Kyle pier for shelter from a forecasted over-night gale.

Work began on 13 January in Loch Kishorn, where three sites were completed before work was started in Loch Carron. Traveling to the head of the loch and working towards the mouth, a further 10 deployments were made (with 8 providing useful data) before *Clupea* returned to Kyle for the night.

The whole of 14 January was spent around the southern end of the Inner Sound, working off the Crowlin Islands, Scalpay, Pabay, Broadford Bay, Loch Ainort and off the south western end of Raasay. 11 sites were covered, with minimal changes to the plan to avoid creels. Applecross Bay provided an anchorage for the night.

On 15 January, 3 sites off the south west of Raasay were studied as well as 2 further sites off Applecross. The Applecross sites had previously been visited on a similar cruise in June 2005. As the vessel headed north, towards Loch Torridon, the swell proved too great to safely complete any stations en-route. Due to the high number of creels in Outer Loch Torridon, only two deployments were completed before the vessel headed west to a trawl site off the North of Rona. Following the one hour tow, the vessel went to anchor off Longa.

Four stations were covered before lunch on 16 January, followed by another 3 in Loch Shieldaig. As the vessel headed east through the Upper Loch towards the anchorage, a further 6 sites were successfully surveyed.

The forecast for the next few days was not favourable for working in the area or steaming through the Pentland Firth. On balance it seemed prudent to head for the East coast on the afternoon of 17 January. Whilst heading west towards the mouth of Torridon, 2 more stations were covered in the Upper Loch and Loch Shieldaig, and 3 in the Outer Loch, before the vessel made for Gairloch at 1330. Fresh water was taken on board at the port before sailing for the Moray Firth.

By 1100 on 18 January the vessel was off Brora, where sediment sampling commenced based on a 1 nautical mile grid pattern around the approaches to the Dornoch Firth. 24 samples were taken on 18 January and 38 on 19 January, with the vessel anchoring off Golspie on both nights.

The 20 January was spent steaming east to Fraserburgh. The vessel arrived in port at 1500, and following the unloading of gear and the debrief, FRS staff left the vessel at 1030.

Results

The main study area was from Applecross south to Loch Nevis, west to Raasay and covering six sea lochs on the mainland, as indicated by the red line on the attached map. This is an area highlighted for possible Marine Stewardship Accreditation. The second priority was to revisit Loch Torridon, to maintain the TV study that FRS has been developing over a number of years in the loch.

Mainly due to good weather conditions throughout most of the cruise, no mechanical problems and an experienced crew, all these objectives were achieved. The coverage on a localised area will provide a very clear picture of the distribution and abundance of *Nephrops* burrow complexes (and other observed and recorded fauna) on this part of the West Coast, and will complement further studies to be carried out later in the year.

Due to the areas of study being heavily fished with creels, the drop frame was used throughout. This minimised the amount of contact the TV system would have with the sea bed, and so reduced the chances of the cable or frame becoming entangled in creels.

In all, 83 sites were visited with the drop frame (where visibility was good enough to provide footage for estimating *Nephrops* abundance). Additional deployments were made, but these were abandoned either due to zero visibility or the motion of the vessel preventing accurate interpretation of the footage. All 83 video records were reviewed and verified by at least two interpreters whilst at sea. Densities will be calculated on return to the Marine Laboratory.

145 Day Grab deployments were attempted, with 136 providing samples. The remaining 9 sites have provided an indication of where there may be hard ground and therefore unsuitable habitat for *Nephrops*. 56 of the samples were taken in the Moray Firth and 80 on the West Coast, and the results will be used to improve the BGS sediment charts in these areas. The samples will be worked up using the Particle Size Analyser on return to the Marine Laboratory. Each sample was assigned a UKAS identification number whilst at sea.

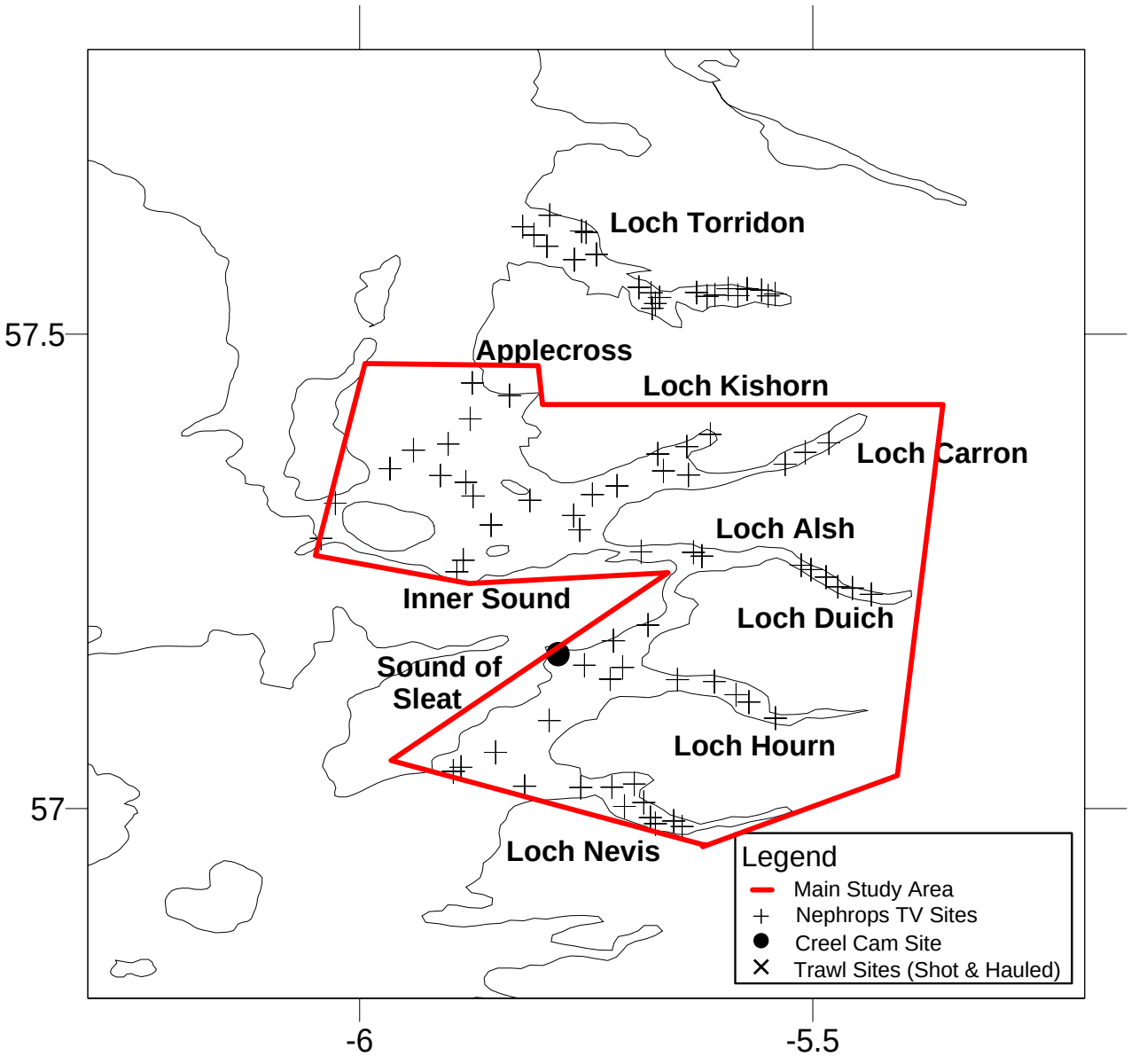
From the one trawl that was completed, few *Nephrops* were caught, although all morphometrics and maturity data was still recorded.

The one deployment of creel cam has only provided limited video due to the damage sustained to the recorder and this footage can not be used in any quantifiable way.

195 still photographs were taken using a 35mm Benthos camera. Once processed these images will be digitally scanned, and will provide good examples of a wide variety of fauna and sea bed composition in this area.

A Weetman
11 April 2008

Clupea West Coast TV Survey January 2008



Moray Firth Sediment Survey
January 2008