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FRV Alba na Mara

Cruise 0109A

Report

7 – 21 January 2009

Ports

Sailing: Fraserburgh

Unloading: Fraserburgh

Personnel

A Weetman (SIC)

C Shand

A Tait

N Campbell

M Burns (7 – 12 January)

Gear

50 mm prawn trawl BT 149B.

Day grab and table.

Towed TV sledge, umbilical towing cable, Konesberg (OE14-366) video camera and

Konesberg digital stills camera (OE14-208 DSC), plus backup.

TV drop frame.

Objectives

- To improve the definition of survey area (*Nephrops* suitable habitat) by allocating TV survey stations according to *Nephrops* fishing activity based on VMS data and catch composition thresholds.
- To visually confirm the presence of *Nephrops* and suitable habitat from video footage recorded by the towed sledge.
- To collect sediment samples at each station.
- To use trawl caught samples of *Nephrops* to record morphometric and biological information.
- The TV survey will also be used to collect data on other benthic fauna.

Estimated Project Time

15 Days MF01TA

Narrative

Scientific staff joined F.R.V. Alba na Mara in Fraserburgh at 1100 on 7 January 2009. A short delay was necessary to allow time for some minor adjustments to be made to the video equipment before the vessel sailed at 1230. Once in deep water to the north of Fraserburgh, the initial task of stretching and improving the lay of the umbilical on the TV winch was carried out by deploying the sledge and most of the cable then recovering the equipment under tension. The poor sea conditions experienced hindered the initial 2 deployments however, the third attempt proved successful, as did the following 2 stations, which were completed before heading back to port, arriving there at 1930. Three more stations were carried out in the same vicinity the following day, before steaming 40 miles north of Fraserburgh and surveying 2 sites before the sea conditions proved too difficult to work in. The vessel arrived in Arberdour Bay at 2000 where it anchored for the night.

Working in a semi-circular pattern on 9 January, 11 stations were surveyed before heading back to Fraserburgh in anticipation of gale force conditions over night. Due to the weather, the vessel stayed in port during the following 2 days. Before sailing on the morning of 12 January, Martin Burns left the vessel and returned to the Lab, having completed his work aboard. The vessel headed west to find areas with more shelter as the forecast predicted the weather would not be favourable in the east. The further offshore the vessel travelled, the worse the sea conditions became, so additional stations were created closer to the shore using the standard protocol. Two of these new stations were sampled before anchoring off Lossiemouth at 1830.

Fourteen stations off Tarbat Ness were completed on 13 January, before anchoring off Burghead for the night. As the weather was forecast to be particularly good on 14 January, exploratory stations to the east and south east of Helmsdale were investigated, using the drop frame, before heading south and returning to Burghead. En route, sites were studied to establish the northern edge of the muddy sediment as suggested by the BGS charts. The video equipment was transferred back on to the sledge on the following morning and then at 1000 the vessel headed out into strong winds but no adverse sea conditions and carried out 8 TV surveys before heading to Invergordon at 1500 to obtain fresh water, arriving at the pier at 1700.

Again in strong winds, work continued to the South and South East of Tarbat Ness the next day, completing 11 TV stations before anchoring off Burghead that night. Setting off early on the morning of 17 January, aiming to maximize the time available before the weather deteriorated, work started 15 miles to the north of Buckie, and continued in a southerly direction before the strength of the wind and the sea conditions forced the vessel back to anchor off Bughead late that afternoon.

Storm force winds were experienced throughout the night, and during 18 January the wind remained too strong to work in so F.R.V. Alba na Mara remained at anchor. Difficult sea conditions were experienced the following day as the vessel headed east but sites were completed and as the day progressed the wind changed direction, improving the state of the sea. With a westerly gale due over night and no safe anchorage available, the vessel headed for Fraserburgh harbour, arriving at 1900.

On 20 January 5 sites were surveyed to the north of Fraserburgh, before heading back to port in the late afternoon, where the equipment was packed away in readiness for unloading, the laboratories were cleaned down and staff prepared for disembarking the next day. After unloading the vessel and completing the debrief, the scientific staff left the vessel at 1100 on 21 January 2009.

Results

The original plan was to carry out the survey in the North Minch, but poor weather conditions prevented a safe passage to the west. Throughout the survey the weather was considerably worse on the west coast than in the Moray Firth, and so if the vessel had managed to reach the west coast, it is unlikely that any work would have been possible.

As an alternative to working in the North Minch the same survey design was applied to the Moray Firth. Essentially, sites were chosen based on effort data gathered from VMS records which was overlaid on a BGS sediment chart. TV stations were plotted where the VMS data reported fishing activity (and the target species was *Nephrops*) which appeared to be outwith or very close to the edge of grounds indicated as suitable *Nephrops* grounds by BGS.

In all, 82 sites were successfully surveyed; each with a record of video, digital stills, position, depth, a count of *Nephrops* burrow occurrence, anthropogenic activity and fauna observations at each site. 79 of the tows have a minimum of 5 minutes of acceptable footage; the remaining 3 sites fell on exceptionally hard ground and the tow was cut short to minimize the risk to the TV equipment.

Observed findings are as indicated in the table below:

	B.G.S. based suitable sediment	B.G.S. based unsuitable sediment	Sites where <i>Nephrops</i> burrows were present	Sites where <i>Nephrops</i> burrows were NOT present
No. Sites	51	31	45	37

	B.G.S. based suitable sediment	B.G.S. based unsuitable sediment	Site lies within VMS effort boundary	Site lies outwith VMS effort boundary
No. Sites where <i>Nephrops</i> burrows were present	35	10	38	7
No. sites where <i>Nephrops</i> burrows were not present	16	21	8	29

These results require further analysis once the sediment samples have been analysed, as temporal trends in *Nephrops* population distribution may have an effect on the observations.

Sediment samples were collected at all but 5 of the 82 stations. A combination of grit, rocks or bedrock were present at the sites where samples could not be obtained. The samples are being analysed using the Mastersizer 2000 Particle Size Analysis machine, and results should be available by the end of March 2009. These results will enhance future survey design, advice and sediment distribution charts.

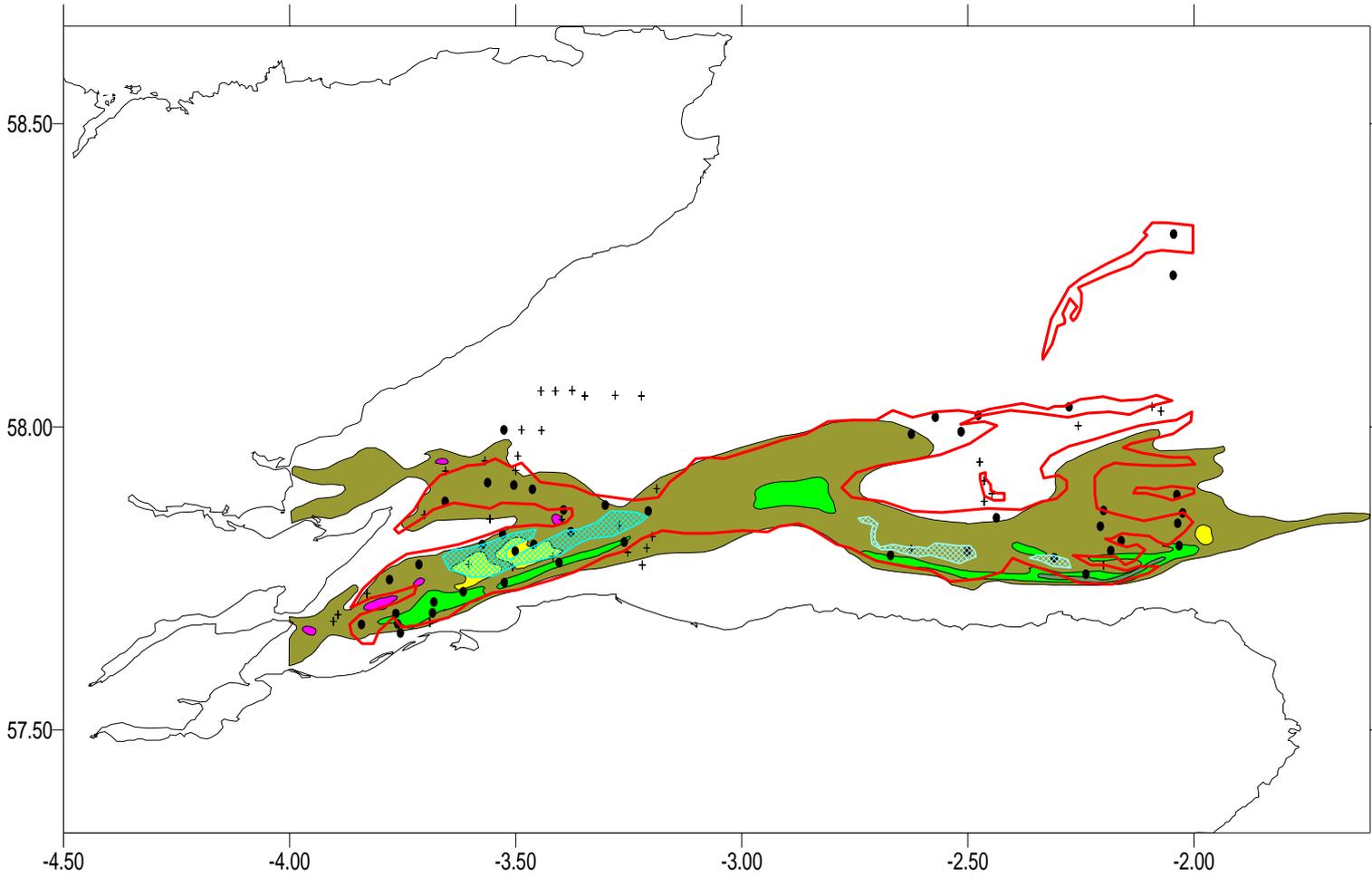
Due to the video survey having a higher priority than trawling, and the poor weather during the cruise, no trawling was undertaken.

In all a total of 777 digital stills were taken. Using the Konesberg digital stills camera, images captured include *Nephrops*, *Nephrops* burrows, scallops, various species of fish, starfish and crabs, squat lobsters, and a variety of diverse sea beds.

To be presented at the WKNEPH (2 – 6 March 2009) will be a working document prepared by Neil Campbell. This will explore the findings of this survey in more detail, and use the P.S.A. results to statistically identify the relationship between fishing vessel effort (from V.M.S. data), and sediment type (from sediment samples collected by Marine Scotland over a number of surveys in the study area) in relation to *Nephrops* abundance and advice.

A Weetman
17 April 2009

Moray Firth January 2009



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|---|--------------------------------------|---|-----------------------------|---|------------|---|-----------|
| + | TV Site No Nephrops Burrows Observed | ○ | Effort Data Recorded by VMS | ■ | Muddy Sand | ■ | Sand |
| ● | TV Site Nephrops Burrows Observed | ■ | No Effort Recorded by VMS | ■ | Mud | ■ | Sandy Mud |
| | | ■ | | ■ | | ■ | Rock |