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RV *Celtic Voyager*

Charter Cruise 1507H

REPORT

4 – 18 April 2007

Ports

Start point: Aberdeen
End point: Aberdeen

Personnel

F Neat (SIC)
M O'Sullivan
D Tobin

Gear

Jackson rockhopper Trawl BT 159 with separator panel, twin cod ends and live fish liner (cod-end).
Rods and lines.

Other Equipment

Scanmar
Seabird CTD
Minilogger
Tanks for live fish (x 4)
Data storage tags and T-bar external tags

Project out-turn: 14 days (MF 0760)

Objectives

1. To internally tag adult cod from the Viking area with G5 data storage tags (DSTs) for investigations of movement and temperature experience.

2. To tag monkfish and haddock using redeployed DSTs from past projects.

3. To biologically sample cod and prespawning haddock.

4. To collect live juvenile haddock and cod for use in laboratory growth trials.

Report

Scientific equipment was loaded onto the vessel on 3 April. Staff joined the vessel on the morning of Wednesday 4 September. Weather was fine and Celtic Voyager departed at 1000. The gear was shot in Aberdeen Bay to tighten the wires, assess performance and

familiarise operations. Although an optimal spread of the gear was not achieved, the trial was deemed satisfactory and the separator panel functioned to separate cod, haddock and flatfish. The catch from the two cod-ends was worked up into a species/length/frequency composition. Following this, immediate passage was made for Shetland to take advantage of fine weather. Upon reaching Shetland, however, a heavy offshore swell and northerly winds prevented immediate passage east toward the Viking Bank area, so the morning of the 5 April was spent towing in inshore waters to try to improve the spread of the gear and angling for cod.

On the morning of 6 April the vessel steamed east for the Bressay Ground and began prospectively towing for cod in the region, gradually working further east as the swell subsided. It proved slow and difficult and at times potentially dangerous to manoeuvre the live fish cod-end from the stern to the starboard side. Since tows were limited to 30 minutes, bulk was not proving to be significant and so a normal cod end was affixed and operations continued with the catch being opened on the afterdeck. The square mesh panel proved highly effective at preventing undesirable bycatch of benthic animals such as urchins and Nephrops. As such most cod were coming up in good condition and thus trawling continued with the normal cod-end. This also meant the operation was faster and safer when a swell was running. A number of cod and monkfish were tagged and released on the Bressay Ground. Fishing operations continued on April 7 in the Bressay East ground and along the UK/Norwegian border. Several large cod were tagged and released.

A forecast of westerly gales meant that the vessel returned to Shetland overnight. The sea state on April 8 was such that by mid-morning trawling operations had to be suspended. By the evening, the winds had eased and passage was made for the Bressay Ground. Trawling commenced the following morning with several cod tagged and released. A severe weather forecast meant that passage was made for Lerwick and the vessel docked at 1900. The next morning gale force winds prevented trawling, but some rod and line fishing was possible and a number of cod were tagged and released close inshore. Gale force winds made it necessary to again dock in Lerwick for the night.

Celtic Voyager set sail the next morning heading for the Norwegian sector of the Viking Bank area. On route a number of tows were made on the Bressay Ground and a small number of cod and haddock tagged and released. Trawling recommenced on the morning of 12 April on the UK/Norway border. At 1200 the vessel entered Norwegian waters and trawling resulted in good catches of large cod. An overnight passage was made to the Viking Bank and trawling commenced early the next morning. Cod were however scarce in this area and after 4 tows it was decided to return to the more productive ground fished the previous day. April 13-15 were spent fishing an area just east of the UK/Norway border where large cod were being captured in almost every haul. All G5 DSTs and other DSTs had been deployed by the evening of April 15. The next day trawling commenced on ground further south in the Bergen bank area for collection of live juvenile cod and haddock. It proved difficult, however, to keep the small haddock alive due to the depth from which they were hauled (approximately 100 m). Celtic Voyager re-entered UK waters at 1200 on 16 April and the vessel steamed south on the evening of April 16. An exploratory tow was made for cod in the 110 Miles Hole region on the morning of April 17. Three cod were flag-tagged and released. With strengthening winds, further trawling was suspended and Celtic Voyager then set a course for Aberdeen – docking at 0800 on April 18. The cruise path and tow positions in the survey area is given in Figure 1.

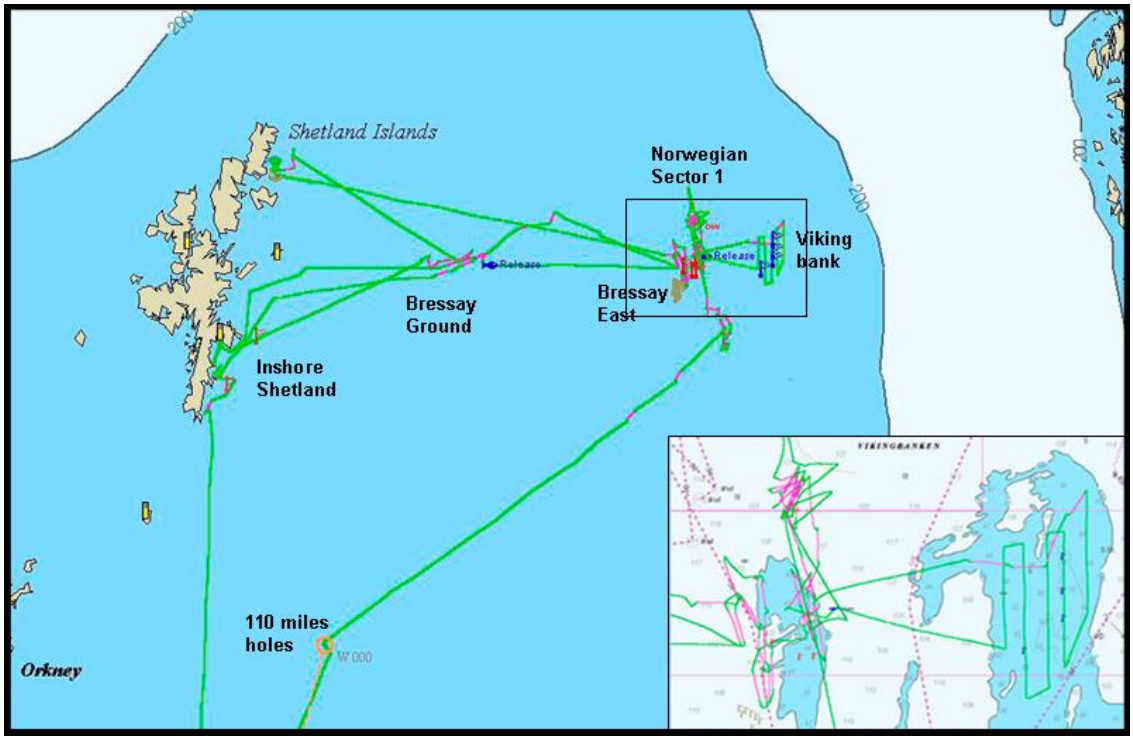

Figure 1: Cruise path of RV Celtic Voyager (green) and tows position (pink). Areas refer to cod release sites in Table 1. Inset bottom right is detailed map corresponding to box in main map showing tow positions in which the majority of large cod were released.

A total of 82 tows were completed, only 1 of which was foul caused by a trawl door falling over. No significant gear damage was incurred and the skipper and crew provided an excellent, reliable service throughout the cruise. Celtic Voyager proved to be highly adequate for the needs of the survey with the exception that operation of the live fish cod-end proved difficult and dangerous. This did not however affect the overall success of the survey. The juvenile haddock did not survive the voyage back to Aberdeen. The cause of death was not clear, but it may have been a combination of trawling from depth with a rough passage on the night of 16 April.

Fish tagging

Tow positions were determined from information supplied by fishermen and previous FRV Scotia surveys. Exploratory tows were made in consultation with the skipper. Tow positions are indicated in Figure 1. If cod were encountered in significant numbers, effort was concentrated in that area to maximise the number of releases. 65 new G5 DSTs were designated for cod and 6 for monkfish. G5 tags were set to record temperature and pressure every 5 minutes. A further 25 electronic tags (Centi and Lotek) were available from past research projects and were redeployed in cod, haddock and monkfish. All available DSTs were deployed. The total numbers of DSTs deployed is shown in Table 1. 11 cod and 19 monkfish were also tagged with T-bar or flag tags (Table 2).

Table 1: Number of cod, monkfish and haddock tagged with internal DSTs in each area (see Fig 1).

Area	Cod	Haddock	Monkfish	Grand total
East Shetland inshore	7			7
Bressay Ground	13			13
Bressay East	16	5	8	29
Norwegian sector 1	46	1	3	50
Viking bank	5		1	6
Total	87	6	13	106

Table 2: Number of T bars/flag tags per area.

Area	Cod	monkfish	Grand Total
Bressay East		1	1
Norwegian sector 1	8	15	23
Viking bank		3	3
110 miles holes	3		3
Total	11	19	30

Biological and genetic sampling

A total of 95 cod that either died or were considered unfit for tagging were sampled for biological, otolith and genetic studies. No prespawning haddock were encountered (all those examined were either spawning or spent) and so no haddock biological sampling was undertaken.

Live fish

51 cod that were too small (< 30 cm) for DST tagging were collected and kept alive in the tanks on board. Approximately 150 1-group haddock were also collected and kept alive in the tanks on board. Survival of haddock was very low and too few survived to make it worthwhile to bring back to the laboratory. All cod survived and are destined to be used in growth trials as part of MF764 at the Marine Laboratory's Fish Behaviour Unit.

Other data collection

A total of 13 Seabird CTD casts were taken at each location where tagged fish were released. A Vemco minilog attached to the headline of the net recorded temperature and pressure each minute of each tow. A real-time GPS system was set up with ARC GIS software as a trial to monitor the position of the ship and log the cruise path. This proved a useful facility, however, the log file failed to write correctly and only sporadic information of the cruise path was actually logged.

F Neat, SIC
14 May 2007

Seen in draft: D. Rowan, Master, RV Celtic Voyager.