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MRV *Scotia*

Survey 0912S

REPORT

22 July – 12 August 2012

Half-landing: Aberdeen, 1 August

Personnel

F Burns	(SIC)
J Drewery	
J Dunn	(Part 1)
M Geldart	(Part 1)
D Lee	(Part 1)
R Cairns	(Part 1)
A Olson	(Part 1)
E Barreto	(Part 1)
K McNeish	(Part 1)
O Goudie	(Part 2)
K Summerbell	(Part 2)
P Copland	(Part 2)
T Fujii	(Visitor)
A Bakhshi	(Visitor - Part 1)
K Padgett	(Visitor - Part 1)
P Vasilakopoulos	(Visitor - Part 2)
T Sykes	(Visitor - JNCC Seabird & Cetacean Observer)
C Cronin	(Part 1 - Visitor - JNCC Seabird & Cetacean Observer)
M Lewis	(Part 2 - Visitor - JNCC Seabird & Cetacean Observer)

Out-turn days: 22 days RV1209

Fishing Gear: GOV Trawl (BT 137) fitted with groundgears A + B.

Objectives

1. To complete an internationally coordinated demersal trawling survey in the North Sea in ICES area IV.

2. To obtain temperature and salinity data from the surface and seabed at each trawling station.

3. Opportunistic acoustic surveying of oil and gas installations using EK60 during downtime to assess their importance as refugia for icthyofauna.

Narrative

Scotia sailed from Aberdeen at 0715 on 22 July. The first haul that also doubled as a familiarisation haul was completed successfully on a clear tow 12 nm east of Girdleness with the fishing gear, Scanmar and bottom contact sensors performing well. *Scotia* then headed

20 nm SW to Stonehaven bay in order to redeploy a guard buoy for a mooring that had come adrift. This was completed by 1630 after which the hydrographic personnel aboard were transferred ashore to Stonehaven and replaced by the two remaining members of the scientific complement yet to join the vessel. *Scotia* was underway by 1930 and was able to complete a second station just east of Montrose, again without incident. Overnight *Scotia* then made her way into the Firth of Forth and by first light on 23 July was on station 20 nm North of Eyemouth in rectangle 41E7. Unfortunately, the net was badly torn and after completing a further three stations to the east of this, *Scotia* returned to a backup position within 41E7 the following morning where the net was deployed successfully. During the next three days and with calm conditions *Scotia* completed the southern component of the survey.

In addition to the trawling, three oil/gas installations (*Breag, Munro and Tyne*) were successfully surveyed using the downtime during the night. With the calm conditions continuing *Scotia* proceeded east completing the stations in the southeast of the survey area. Another two oil installations (*Gyda and Tor*) were successfully surveyed whilst *Scotia* was en route to the next fishing station during the night.

In the main the fishing operations were completed without incident, however, on the afternoon of 29 July, whilst undertaking haul 350 in 41F5 the net stuck fast on the bottom and despite numerous attempts to release it the gear was lost with only the doors being retrieved. Efforts were made to retrieve the gear user a creeper but this was to no avail and a new net was rigged. The station was repeated successfully on the same tow but beyond the location of the fastener. As a result of the time lost rectangle 41F4 was dropped from the survey plan in order for *Scotia* to maximise the overnight steam west to commence next morning at rectangle 42F2. A further eight stations were completed before docking in Aberdeen at 2300 on 31 August for the half landing. In addition the *Buchan* platform was successfully surveyed on the night of 30 July prior to completing the first station the following morning.

Scotia sailed at 1000 on the morning of 2 August and headed straight for the Moray Firth successfully completing three stations along the south coast as well as a survey of the Beatrice Platform on the same night. From there *Scotia* proceeded north and east before completing the stations around Orkney and then Shetland. Once again these were generally completed without incident although *Scotia* sustained another foul haul in rectangle 48E7. Despite significant damage to the net, it was repaired in good time allowing an additional haul to be completed that evening and the following day an alternative tow for rectangle 48E7 was sourced and completed successfully.

On 7 August *Scotia* proceeded eastwards from Shetland completing stations on the north eastern boundary of the survey area before heading south to complete the remaining survey area. During this period *Scotia* was able to successfully survey three oil platforms *(Oseberg, MCP01(disused) and the submerged Piper Alpha foundations*). The last two fishing stations were completed by mid morning of 11 August in 44F2 and 44F1. With the survey completed *Scotia* then headed for Aberdeen and was alongside by 2000 on the evening of 11 August.

Results

Trawling

The GOV was deployed on 87 occasions. A total of 84 valid hauls were achieved and there were three foul hauls. During the survey groundgear ‘A’ was used on all stations at latitudes south of 57’30N whereas groundgear ‘B’ was deployed on all stations north of 57’30N. In all 41 stations were completed successfully using groundgear ‘A’ rig and 43 stations with groundgear ‘B’. The locations used for the trawl positions were a combination of established

trawl locations as well as completely new locations. To begin with random positions were placed within each sampled survey rectangle. For rectangles containing more than one valid fishing tow then the nearest established tow to the random position was chosen and for those rectangles where there was only one suitable fishing tow then either that tow was used or if the situation allowed, a completely new tow would be sourced within 5nm of the random position. In all 13 new tows were sourced during this survey and the intention is to expand this until all of the rectangles within the current survey area contain at least two sampling locations thus enhancing the randomisation of the locations within the survey rectangles.

The Scanmar system was used to monitor headline height, wing spread, door spread and distance covered during each tow. A bottom contact sensor was attached to the groundgear for each tow to monitor ground contact as well as to validate touchdown and liftoff of the groundgear. The data was downloaded for further analysis in the laboratory.

Fishing was carried out in the main during the daylight period commencing each day at first light. Otoliths from all pelagic species as well as the haddock and Norway pout were aged at sea with the remaining demersal species (cod, whiting and saithe) being aged back at the laboratory. All haul summary data, length frequency and pelagic age data were also punched at sea (see Figure 3 for station positions).

The provisional Scottish indices for cod, haddock and whiting for groups 0+ and 1+ are shown in Figures 1 and 2 respectively.

0+ numbers in 2012 for cod, haddock and whiting saw an increase on both 2010 and 2011 estimates; however, they are still well below the ten year average for each. Norway Pout (not shown here) saw the highest CPUE index seen in the surveys history with an index for 0+ of 100666 fish/10 hrs.

For the 1+ group the picture is somewhat different with both haddock and whiting significantly down on recent years and, therefore, the tne year average. 1+ cod numbers are up on last year and indeed slightly up on the tne year average. 86 species with a total catch weight of 30.48 tonnes were recorded during the survey with the most interesting specimen encountered being a Yarrell's Blenny (*chirolophis ascanii)* which was caught in square 40E8.

Other interesting species noted were a sunfish *(mola mola)* that was recorded by one of the seabird observers in 41F6 and a humpback whale *(Megaptera novaeangliae)* that was seen breaching clear of the water repeatedly just outside the entrance to Aberdeen harbour upon our return on 11 August. Catch weights (tonnes) for the major species are as follows, cod - 0.9, haddock - 3.8, whiting - 1.8, herring - 8.1, mackerel - 1.7, sprat - 1.6, Norway pout - 3.8 and saithe - 0.9.

Hydrography

The CTD (*seabird19+)* was deployed at each trawling station in order to obtain a temperature and salinity profile. The thermosalinograph was running throughout the entire survey and provided surface temperature and salinity data.

Biological Sampling

Additional biological data were collected from species in support of EU Data Collection Framework (DCF). Information on length, total weight, gutted weight, sex and maturity was collected for 13 species. A summary of numbers collected by species is displayed in Table 1.

Table 1

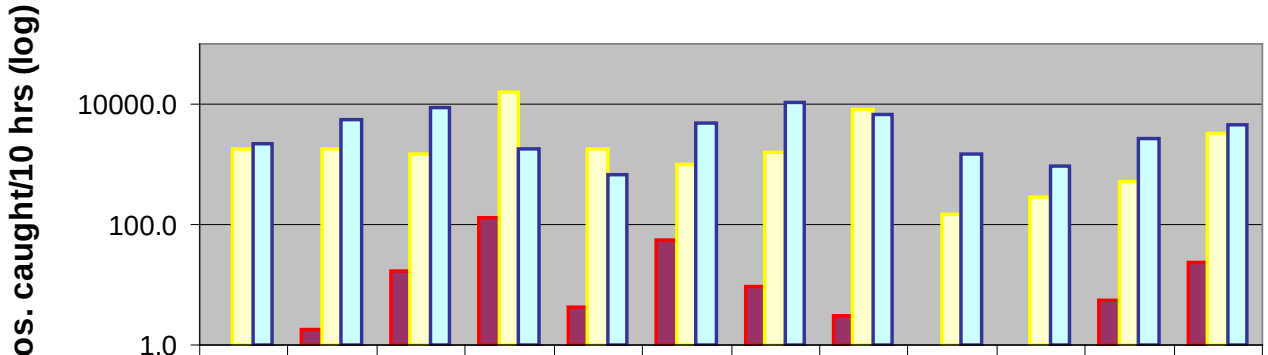
Number of biological samples (maturity and age material, *maturity only):	
Species	Age
Gadus morhua	416
Melanogrammus aeglefinus	1380
Merlangius merlangius	1331
Pollachius virens	304
Clupea harengus	801
Scomber scombrus	508
Trisopterus esmarkii	432
Sprattus sprattus	465
Dipturus intermedia	10*
Amblyraja radiata	62*
Raja naevus	45*
Raja fullonica	3*
Raja montagui	102*
Psetta maximus	5*
H. hippoglossoides	*1

Acoustic Surveying of Oil and Gas installations

Passive acoustic surveying using the EK60 scientific sounder was completed successfully on ten installations within the survey area (see Figure 3). This involved *Scotia* requesting clearance from and liaising with the rigs involved and then steaming at a reduced speed in a straight line up to and then away from the exclusion zone perimeter at 500 m distance from the installation. In the case of the submerged Piper Alpha stack *Scotia* was able to survey right over the top of it thus enabling an uninterrupted transect to be completed for this site. The resulting acoustic data from these sites will be analyzed by Oceanlab scientists with a view to continuing research on how Gas and Oil Platforms act as potential refugia for ichthyofauna in the North Sea.

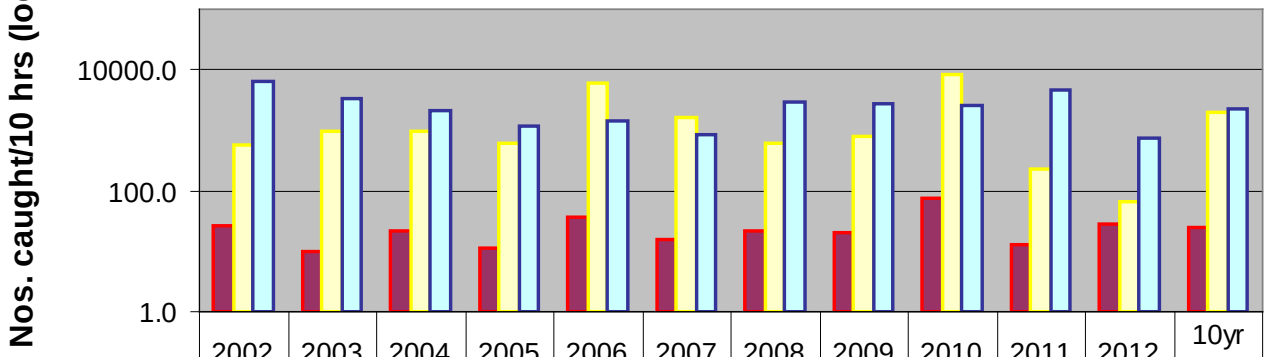
F Burns
29 October 2012

Fig.1 ICES Area 4 Q3 SCO IBTS, Numbers caught per 10 hours fishing Age 0+



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	10yr ave
cod	0.2	1.9	16.7	134.4	4.2	53.7	9.5	3.2	0.6	0.0	5.6	23.0
haddock	1774	1780	1437	16099	1863	981	1550	8138	146	287	526	3280.6
whiting	2190	5557	8990	1818	667	4850	11029	6863	1532	947	2662	4491.6

Fig.2 ICES Area 4 Q3 SCO IBTS, Numbers caught per 10 hours fishing Age 1+



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	10yr ave
cod	27.2	9.8	21.5	11.0	35.8	15.8	21.5	20.6	73.3	13.0	28.8	25.1
haddock	556	964	988	621	5937	1575	601	793	8131	229	64	1990.4
whiting	6366	3267	2175	1139	1400	846	2833	2802	2613	4697	758	2253.1

Figure 3: 0912S survey map. Black circles denote sampling positions; red crosses denote locations of foul hauls. Open blue circles denote location of surveyed oil and gas installations.