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

FRV *Scotia*

Cruise 1114S

Report

Dates

31 July – 22 August 2014

Half-landing: Aberdeen, 10th August

Personnel

Burns	(Part 1)	(SIC – Part 1)
Drewery	(Part 2)	(SIC – Part 2)
Lines		(Deck – Part 2)
Dooley		
Ensor		
G-Mules	(Part 1)	
Kinghorn	(Part 1)	(Deck)
Holah	(Part 1)	
Gault	(Part 2)	
Mills	(Part 2)	
White	(Part 2)	
Birnie	(Part 1)	(Visitor – Scottish Fishermen's Federation)
Murray		(Visitor – Aberdeen University)
Coombes	(Part 1)	(Visitor - JNCC Seabird & Cetacean observer)
Pollack	(Part 1)	(Visitor - JNCC Seabird & Cetacean observer)
French	(Part 2)	(Visitor - JNCC Seabird & Cetacean observer)
Thomas	(Part 2)	(Visitor - JNCC Seabird & Cetacean observer)
Hastie	(Part 2)	(Visitor – Aberdeen University)

Out-turn days: 23 days – RV1409

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. 3. EDC (electronic data capture) and FSS database utilised for recording all biological survey data

4. To collect additional biological data in connection with the EU Data Collection Framework (DCF).

Narrative

Scotia sailed from Aberdeen at 0715hrs on the 31st July in good sea conditions. The first haul northeast of Aberdeen doubled as a familiarisation haul and was completed successfully with the fishing gear, scanmar and bottom contact sensors all performing well. Over the next 3 days a further 14 hauls were completed covering the inner and outer Moray Firth and west of the Orkneys. Survey coordination with international partners saw the initial survey design alter to incorporate selected squares with two hauls rather than one. To facilitate this fishing in certain squares to the north of the survey area became no longer a requirement, work there being taken up by other nations. A further two initially unplanned squares were included however the total number of required hauls for the survey remained the same overall. Scotia continued to the west and north of Shetland completing a further 12 stations but encountering some foul hauls with damaged gear on the way. On 7th August Scotia surveyed due east before undertaking the first additional square (51F2). On 10th August Scotia undertook another additional square (44F1) which was the last one before changing over to groundgear A. A final 3 hauls were undertaken on 11th August before Scotia docked in Aberdeen for half-landing and staff changeover.

Scotia left harbour at 0200 hrs on the morning of the 13th August and steamed south for the first station east of the Firth of Forth. The survey continued east for the next 4 days completing 16 further stations by 16th August then steaming 100 miles to the southeast to be off Denmark for the return leg west. The survey proceeded without incident or damage over the next 4 days with 18 more stations completed. On 21st August the final two stations were completed around the Farne Deeps. An opportunity was taken to attempt capture of live haddock for behavioural experiments at Marine Lab at two locations before committing to the steam north. Both attempts were successful in capturing live haddock; however none were of the size required for the project. Scotia steamed for Aberdeen and was alongside for 2100hrs that same day. Staff and equipment departed the vessel on the morning of 22nd August.

Results

Trawl Survey

The GOV was deployed on 87 occasions. A total of 84 valid hauls were achieved covering all target statistical squares. There were 3 foul hauls all of which had valid substitutes. Groundgear A was deployed on all stations south of 57’30N and groundgear B on all stations north that latitude. In all 40 stations were completed successfully using groundgear A rig and 44 stations with groundgear B. All stations also used the west coast GOV design with strengthening strips to limit the customary damage that has tended to occur on stations to the north of the survey area. Stations fished with groundgear A used the North Sea GOV design as used in all areas of the North Sea IBTS survey prior to this year. 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. 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. This was downloaded each haul. All fishing was undertaken during the daylight period.

A total of 78 species were caught for an overall catch weight of ~45.59 tonnes. Major components (tonnes) included: herring (~18.31), norway pout (~4.69), haddock (~4.48), whiting (~3.57), grey gurnards (~2.48), common dab (~2.30), and blue whiting (~2.00). CPUE for major species is illustrated in Figure 3.

Indices for the cruise contribute to an internationally combined survey index which is provided to ICES Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK).

Hydrography

The CTD (seabird19+) was deployed at each of the 84 valid trawling station in order to obtain a temperature and salinity profile. Out of these there were 5 stations where deployments were problematical so n=79 valid profiles. The thermosalinograph was running throughout the entire survey to record surface temperature and salinity data.

Biological Sampling

Additional biological data were collected from species in support of EU Data Collection Framework (DCF). A summary of numbers collected by all species is displayed in Table 2.

Electronic Data Capture

All hardware and software connected with EDC and FSS performed very well. All haul summary data, catch composition, and length frequency were entered into the system at sea.

Miscellaneous

Marine litter:

- All litter picked up in the trawl was classified, quantified and recorded then retained for appropriate disposal ashore.

Tissue samples

- Tissue samples of herring and monkfish (*Lophius spp*) were collected as part of the Descriptor 9 project.

Aberdeen University participation:

- 3-D visualisations: during the cruise over 250 3-D specimen digitisations were constructed from 8 common species. The majority of these will form a quantitative morphometric dataset and will be the basis of further work towards automated specimen ID. There were also illustrative-quality representations made that are suitable for use as references.
- A number of fish were retained for examination as part of a biomedical investigation into spatial and seasonal distribution patterns of common nematode parasites(*Anisakis*, *Contracaecum*, *Hysterothylacium*, *Pseudoterranova*) in European waters: cod -50, haddock – 185, whiting – 220, herring – 150, plaice – 70, grey gurnard – 70, bullrout (*M. scorpius*) – 8, monkfish – 10.

Scottish Fisherman's Federation (SFF) participation:

- SFF personnel were given training in fish identification and sampling technique (part 1).

Seawater samples

- Low nutrient seawater samples were collected in square 43E9 for routine monitoring.

Seabird and sea mammal observations

- Observations on numbers and species of seabirds, cetaceans etc. were undertaken on behalf of JNCC throughout the survey.

Submitted
Jim Drewery
29/01/2014

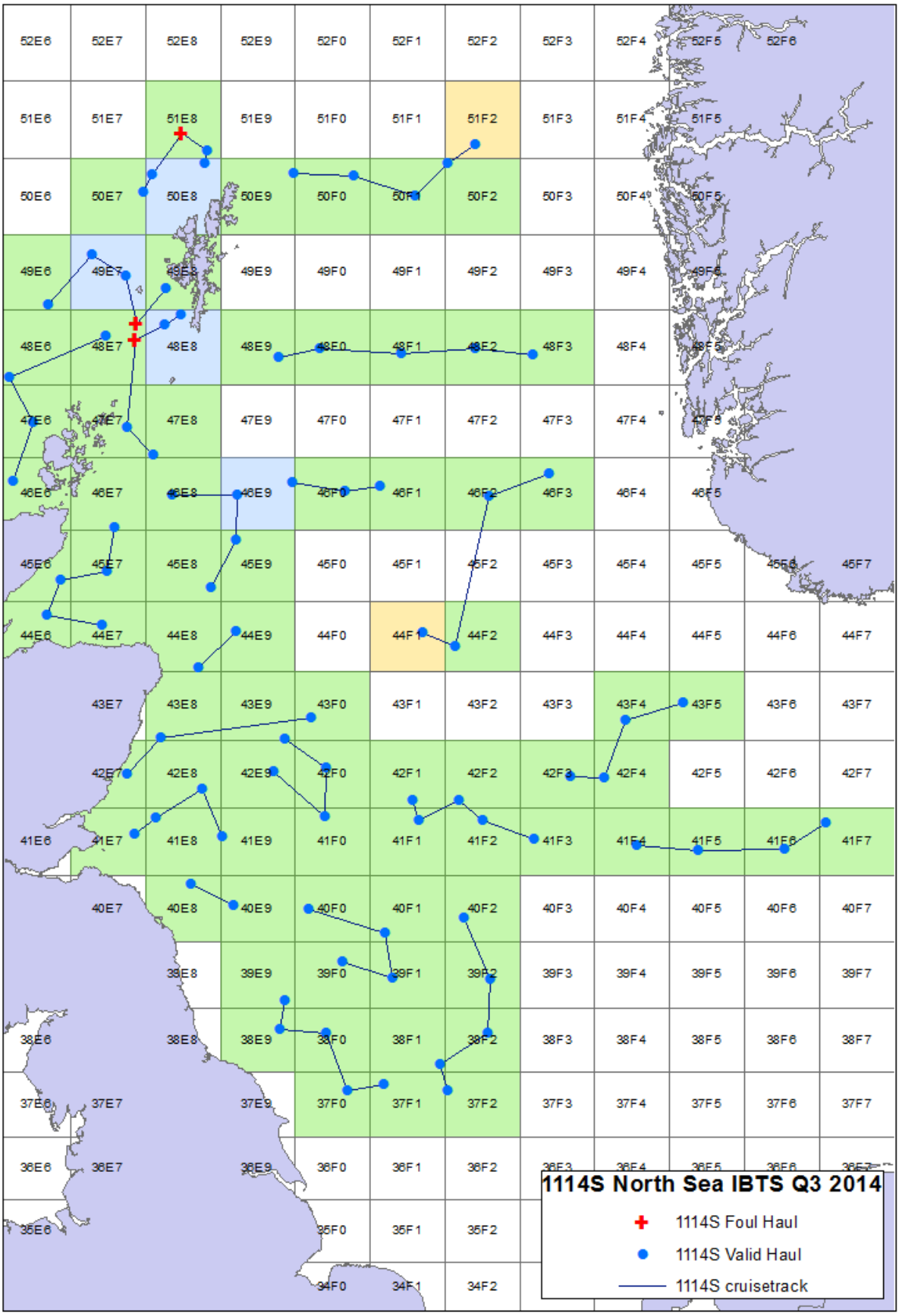

Figure 1: Survey map showing completed squares, haul positions and daily cruise segments for 1114S. Green: completed survey squares, single haul, blue: completed survey squares, two hauls, orange: squares additional to original plan.

Species	No.	Species	No.
Melanogrammus aeglefinus	1336	*Leucoraja naevus	27
Merlangius merlangus	1403	*Raja montagui	50
Gadus morhua	595	*Amblyraja radiata	78
Pollachius virens	244	*Mustelus asterias	2
Trisopterus esmarkii	508	*Scopthalmus rhombus	2
Clupea harengus	1237	**Chelidonichthys spinosus	37
Spattus sprattus	432	*Dipturus intermedia	7
Scomber scombrus	269	Scopthalmus maximus	2
Pleuronectes platessa	271	**Zeus faber	1
Merluccius merluccius	**453		

Figure 2: Numbers of biological observations per species collected during 1114S (length, weight, sex and age, * length, weight, sex and maturity, ** length, weight, sex plus otoliths retained but not aged). Note: a subset of the hake otoliths are programmed to be aged at a future date.

Species	kg/hr	no/hr
Clupea harengus	460	3349
Trisopterus esmarkii	118	24076
Melanogrammus aeglefinus	112	1577
Merlangius merlangus	90	2846
Eutrigla gurnardus	62	475
Limanda limanda	58	907
Micromesistius poutassou	50	2182
Scomber scombrus	40	179
Trachurus trachurus	27	84
Gadus morhua	22	20
Merluccius merluccius	21	22
Pleuronectes platessa	15	64
Pollachius virens	14	11
Microstomus kitt	11	77
Hippoglossoides platessoides	9	243
Scyliorhinus canicula	9	11
Sprattus sprattus	3	319
Molva molva	3	2
Lophius piscatorius	2	1
Raja montagui	1	1
Argentina sphyraena	1	29
Lepidorhombus whiffiagonis	1	3
Trisopterus minutus	1	49

Figure 3: CPUE of major species observed during 1114S