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MRV *Scotia*

Survey 1315S

## **PROGRAMME**

19 September – 02 October 2015

**Loading:** Aberdeen, 16 September 2015

**Unloading:** Aberdeen, 02 October 2015

In setting the survey programme and specific objectives, etc. the Scientist-in-Charge needs to be aware of the restrictions on working hours and the need to build in adequate rest days and rest breaks as set out in Marine Scotland's Working Time Policy (Notice 34/03). In addition, the Scientist-in-Charge must formally review the risk assessments for the survey with staff on-board before work is commenced.

In the interest of efficient data management it is now mandatory to return the survey report, to I Gibb and the Survey Summary Report (old ROSCOP form) to M Geldart, within four weeks of a survey ending. In the case of the Survey Summary Report a nil return is required, if appropriate

## **Personnel**

S. Hughes	(SIC)
A. Gallego	
J. Hindson	
M. Geldart	
D. Lee	
L. Duran Suja	(Visitor Heriot-Watt University (HWU))
P. Sheehan	(Visitor University of East Anglia)
K. Walika	(Visitor Scottish Association for Marine Science)

**Out-turn days per project:** 14 days: ST03P

## **Gear**

Sea-Bird CTDs, ADCPs and current meter instrumentation, water filtering equipment (x2), centrifuge equipment (HWU), bacteria sampling equipment (HWU), sediment sampling equipment (UoA), mooring equipment, recovery trawl, drifters, sediment grabs (Van Veen / Day) and sediment corers (MSS / UoA).

## **Objectives**

1. Test the CTD in the Buchan Deep off Peterhead. Collect water samples for salinity sub-standards (12x5 litre – 4 crates of salinities).
2. Perform hydrographic sampling along the JONSIS long term monitoring section in the northern North Sea.
3. Perform CTD stations at the ADCP moorings on the cross shelf line adjacent to the

Fair Isle – Munken section.

4. Recover and download the data recovered from the one ADCP moorings deployed on the cross shelf section, adjacent to the Fair Isle – Munken section, during 2014. (Note that an additional two recoveries may be required if there are any concerns about the condition of the recovered mooring). Redeploy the mooring.
5. Deploy one new ADCP moorings in a trawlproof frame at a position on Fair Isle – Munken section.
6. Perform hydrographic sampling along the long term monitoring Faroe-Shetland Channel sections, Fair Isle – Munken and Nolso – Flugga.
7. Take water samples for long term storage at Fair Isle – Munken section stations FIM-01 and FIM-06.
8. Take water samples for bacteria analysis at FIM03, FIM06a, FIM08, NOL07, NOL08 and SEFOS (b/w NOL03 and NOL03a).
9. Take sediment samples using the Maxi-corer at or near a number of the Nolso – Flugga section stations. This will include some time for training on coring/sampling procedures for staff unfamiliar in its operation.
10. Take micro plastic water samples at a number of locations.
11. Deploy drifters on the Shetland Shelf for the SAMS aquaculture modelling experiment. Perform CTD stations at the shelf edge to determine structure prior to deploying drifters.
12. Perform a number of other hydrographic sections if time allows. Namely: Repeat of NOL and FIM sections. Survey of Shetland/Orkney waters for model validation studies.

## **Procedure**

On sailing from Aberdeen *Scotia* will make passage to the start of the JONSIS long term monitoring section to commence sampling with the CTD and carousel water sampler. On route test deployments of the CTD and carousel will take place around the Buchan Deep, using the newly developed deployment procedures (10 m soak). Sea water samples will be collected to form a set of salinity sub-standards used in salinity analysis.

On completion of the JONSIS section passage will be made to the start of the ADCP line across the shelf edge adjacent to the Fair Isle - Munken (FIM) section and the CTD will be deployed at each mooring location.

After the completion of all CTD profiles, the ADCP mooring at NWSO will be recovered. On this trip only one mooring is planned for recovery, however, we will carry enough equipment to recover and redeploy all moorings in the event that the condition of the recovered mooring suggests this is necessary. The ADCP instrumentation data will be downloaded and instruments and mooring refurbished on route to the new deployments positions at NWSL. A new mooring in a trawl proof frame will be deployed on the line. CTD dips will again be done at the mooring positions.

*Scotia* will then make her way to the start of the FIM section for the long term monitoring samples and CTD profiles to be taken. Thereafter, *Scotia* will make way to the area of the Nolso-Flugga (NOL) section.

During CTD and water sampling of the FIM and NOL long term monitoring sections, grab samples and water samples will be taken for University of St Andrews, University of Aberdeen and the Heriot-Watt University visiting scientists. Micro plastic samples will be taken opportunistically through the survey.

After completion of the FIM section, *Scotia* will return to the Shetland shelf in order to undertake a set of close CTD sections in support of the aquaculture deployments. The drifters will be deployed in a pre-planned pattern, with the locations on the shelf to be determined after inspection of satellite imagery. After this, a sequence of 16 surface drifters will be deployed at positions to be determined. The drifters do not need to be recovered.

Any remaining time will be spent repeating the stations of the Fair Isle – Munken sections and Nolso-Flugga sections, carrying out CTD sampling on the shelf edge between Orkney and Shetland, and testing the operation of the Maxi-Corer.

### **Mooring Positions (Recovery)**

Note that positions are target positions. For recovery purposes, actual deployed positions are to be found on mooring logsheets. Mooring operations often involve assistance from crew members, to be sure that everyone is clear about procedures a briefing with officers/crew and scientists will be scheduled prior to operations commencing.

### **New deployment**

- NWSL - 60° 52.63' N 005° 31.53' W (moored ADCP in seabed frame, trawl-resistant, water depth 472 m).

### **For service (Recovery and Re-deployment)**

- NWSO - 60° 41.49' N 005° 04.12' W (moored ADCP in floatation collar, up to 400 m of wire, water depth 918 m).

### **To be left deployed (unless necessary to service wires)**

- NWSP - 60° 37.76' N 004° 55.05' W (moored ADCP in floatation collar, up to 400 m of wire, water depth 1019 m).
- NWSN - 60° 45.22' N 005° 13.22' W (moored ADCP in floatation collar, up to 200 m of wire, water depth 865 m).

The thermosalinograph will be run throughout the survey.

(NOTE: The survey will take *Scotia* into the Foinaven Development Area. This is now standard practice and normal on-site communications will be established with the Foinaven co-ordinating officer).

### **Health and Safety**

The procedures described above are covered by the following risk assessments

01 - Mobilisation of Equipment

- 03 - Deployment and Recovery of Moorings
- 04 - Operation of 911+/Sealogger Carousel and CTD
- 05 - Salinity Analysis
- 07 - Chlorophyll Sampling
- 22 - Deployment of Drogues
- 23 - Use of sediment corer on large vessels
- 18 - Supervising students and other visitors

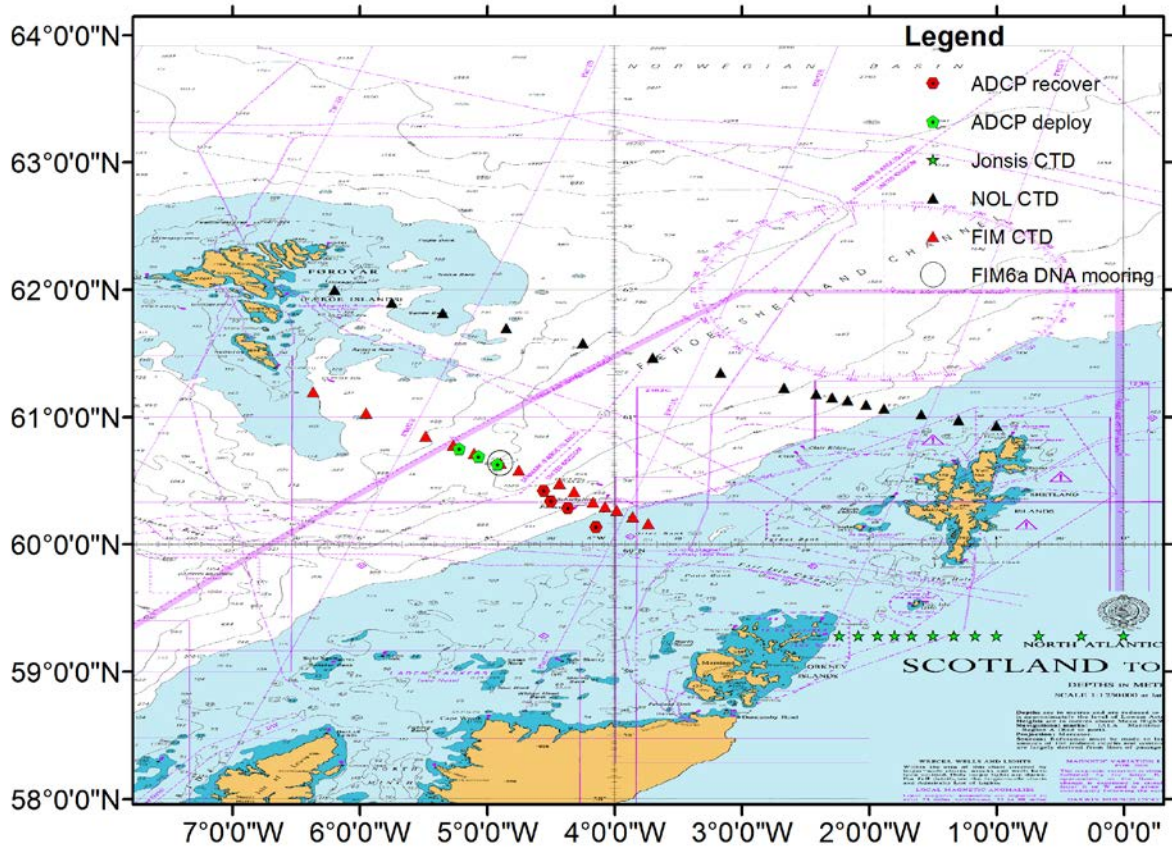
Visitor Work

L. Duran Suja has submitted an SOP – work will be covered by Risk Assessments 04 and 07

Normal contacts will be maintained with the laboratory.

Submitted:  
Sarah Hughes  
03 September 2015

Approved:  
I Gibb  
15 September 2015



CTD lines and mooring locations.

**JONSIS Line**

	Name	Latitude	Longitude	Depth	Spacing
01	JO 1	59° 17.00' N	02° 14.00' W	75 m	
02	JO 1A	59° 17.00' N	02° 5.00' W	90 m	4.59 nm
03	JO 2	59° 17.00' N	01° 56.00' W	100 m	4.59 nm
04	JO 3	59° 17.00' N	01° 48.00' W	80 m	4.08 nm
05	JO 4	59° 17.00' N	01° 40.00' W	90 m	4.08 nm
06	JO 5	59° 17.00' N	01° 30.00' W	95 m	5.10 nm
07	JO 6	59° 17.00' N	01° 20.00' W	110 m	5.10 nm
08	JO 6A	59° 17.00' N	01° 10.00' W	120 m	5.10 nm
09	JO 7	59° 17.00' N	01° 0.00' W	125 m	5.10 nm
10	JO 8	59° 17.00' N	00° 40.00' W	120 m	10.20 nm
11	JO 9	59° 17.00' N	00° 20.00' W	140 m	10.20 nm
12	JO10	59° 17.00' N	00° 0.00' W	135 m	10.20 nm
Totals				1180 m	68.36 nm

**Fair Isle - Munken** (Amended for presence of Foinaven oil platform)

	Name	Latitude	Longitude	Depth	Spacing
01	FIM-01	60° 10.00' N	03° 44.00' W	150 m	
02	SEFF1	60° 13.00' N	03° 51.50' W	170 m	4.78 nm
03	FIM-02	60° 16.00' N	03° 59.00' W	200 m	4.77 nm
04	SEFF2	60° 18.00' N	04° 04.50' W	330 m	3.38 nm
+05	<i>FIM-03</i>	<i>60° 20.00' N</i>	<i>04° 10.00' W</i>	<i>390 m</i>	<i>3.37 nm</i>
06	FIM-04	60° 25.00' N	04° 19.00' W	655 m	6.68 nm
07	FIM-05	60° 29.00' N	04° 26.00' W	995 m	5.28 nm
08	FIM-06	60° 35.00' N	04° 45.00' W	1090 m	11.09 nm
+09	FIM-6a	60° 38.00' N	04° 54.00' W	1030 m	5.33 nm
10	FIM-07	60° 43.00' N	05° 06.00' W	915 m	7.71 nm
+ 11	FIM-08	60° 47.00' N	05° 16.00' W	830 m	6.31 nm
12	FIM-09	60° 51.00' N	05° 29.00' W	600 m	7.49 nm
13	FIM-10	61° 02.00' N	05° 57.00' W	280 m	17.47 nm
14	FIM-11	61° 12.00' N	06° 22.00' W	240 m	15.66 nm
Totals				7,875 m	99.00 nm

+ Water samples to be taken for HWU

## Nolso-Flugga

	Name	Latitude	Longitude	Depth	Spacing
01	NOL-01	60° 56.00' N	01° 00.00' W	110 m	
02	SEFN1	60° 58.70' N	01° 17.70' W	125 m	9.00 nm
03	SEFN2	61° 01.40' N	01° 35.40' W	155 m	8.98 nm
04	NOL-02	61° 04.00' N	01° 53.00' W	270 m	8.90 nm
05	SEFN3	61° 06.00' N	02° 01.50' W	440 m	4.56 nm
* 06	NOL-03	61° 08.00' N	02° 10.00' W	550 m	4.56 nm
+ 07	SEFN4	61° 09.30' N	02° 17.50' W	630 m	3.84 nm
08	NOL-3a	61° 11.00' N	02° 25.00' W	730 m	3.99 nm
09	NOL-04	61° 14.00' N	02° 40.00' W	1080 m	7.81 nm
10	NOL-05	61° 21.00' N	03° 10.00' W	1370 m	16.00 nm
11	NOL-06	61° 28.00' N	03° 42.00' W	1235 m	16.82 nm
*+ 12	NOL-07	61° 35.00' N	04° 15.00' W	990 m	17.20 nm
*+ 13	NOL-08	61° 42.00' N	04° 51.00' W	235 m	18.45 nm
* 14	NOL-09	61° 49.00' N	05° 21.00' W	180 m	15.81 nm
* 15	NOL-10	61° 54.00' N	05° 45.00' W	290 m	12.36 nm
* 16	NOL-11	62° 00.00' N	06° 12.00' W	125 m	14.02 nm
Totals				8250 m	161.92 nm

\* Grab or sediment core samples at or nearby these stations for UoA. We may do more sediment sampling at deep (>1000m stations if time allows)

+ Water samples to be taken for HWU