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MRV *Scotia*

Survey 1016S

## **PROGRAMME**

18 July – 3 August 2016

### **Ports**

**Loading:** Aberdeen, 15 July, 2016

**Half Landing:** Stornoway, 27 July 2016

**Unloading:** Aberdeen, 3 August 2016

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 (Lab 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**

I. Gibb	SIC (part 1)
E. Armstrong	SIC (part 2)
J. Hunter	
M. Watson	
J. O'Conner	JNCC
P. Chaniotis	JNCC
H. Carr	JNCC
B. Graves	JNCC
E. Last	JNCC
K. Tebbutt	BSL

**Estimated days by project:** 17 days – C423

### **Gear**

Sonardyne Ranger II USBL system  
Sonardyne directional / omni-directional transponders (x3)  
TV drop frame and wiring harness  
TV sledge and wiring harness  
SEA LED lights (x4)  
SeaLaser (x4)  
Kongsberg OE14-408 digital camera system

Kongsberg OE14-366 digital still camera system  
Kongsberg OE14-366 TV camera system  
SUBC 1-CAM Alpha HD camera system  
mini Hammon grab  
0.25m<sup>2</sup> USNEL BSL Box core

## **Background**

Marine Scotland Science (MSS) and the Joint Nature Conservation Committee (JNCC) and will undertake an offshore seabed survey of Geikie Slide and Hebridean Slope (GSH hereafter) Scottish Nature Conservation Marine Protected Area (NCMPA) on the Marine Research Vessel (MRV) *Scotia* (Figure 1). Located to the north-west of Scotland, Geikie Slide and the Hebridean Slope (GSH) NCMPA follows the descent of the seabed from a depth of 113m on the Hebridean continental shelf, into the deep-sea of the Rockall Trough to a depth of 1757m. Habitats within the MPA vary down the slope with the descent into deeper water. The MPA represents the variation in sandy, muddy and gravelly habitat types present, and the animal communities they support.

## **Objectives**

1. Conduct a Type 1 monitoring survey of GSH focusing sampling within nested boxes positioned to allow for sampling to occur across the range of depths, biological zones (as proposed by Hughes et. al, 2014) and proposed management measures at the site.
2. Conduct Type 3 sampling within a nested box outside of GSH at the same depth and of similar current fishing pressure as a nested box within a proposed management measures area in GSH.
3. Conduct a camera chariot transect and benthic sampling survey within GSH (including within area of existing MBES bathymetry and backscatter data) to gather further information on the distribution of broadscale habitats present within the site.

## **Narrative**

All staff will join *Scotia* either on the evening of 17 July or early on 18 July so allowing the vessel to depart Aberdeen Harbour as early as possible on 18 July. After completion of safety drills and exercises, *Scotia* will proceed westwards towards the Geikie Slide and Hebridean Slope survey area (GSH), stopping at a suitable location (Buchan Deeps) to undertake gear testing on route. The vessel will then make passage to the work site and commence sampling with the 0.25m<sup>2</sup> box core and TV frames on the stations detailed in Figure 2 and in Table 1 and 2. In total, 108 TV, sediment and benthic infaunal samples will be collected from the GSH site.

Off-site contingency options have been identified following discussion with Scottish Natural Heritage (SNH). These sampling stations may be visited if work is disrupted by prolonged bad weather.

The vessel will undertake a port call in Stornoway on Wednesday 27 July to exchange scientific staff.

*Scotia* will cease operations sometime during the day of 1 August to ensure that the vessel is in Aberdeen for the morning of 3 August when all sampling equipment will be offloaded and scientific staff will leave the vessel.

A full and detailed survey plan and scientific rationale will be presented at the pre-brief meeting, before the beginning of the survey.

The thermosalinograph will be run throughout the survey.

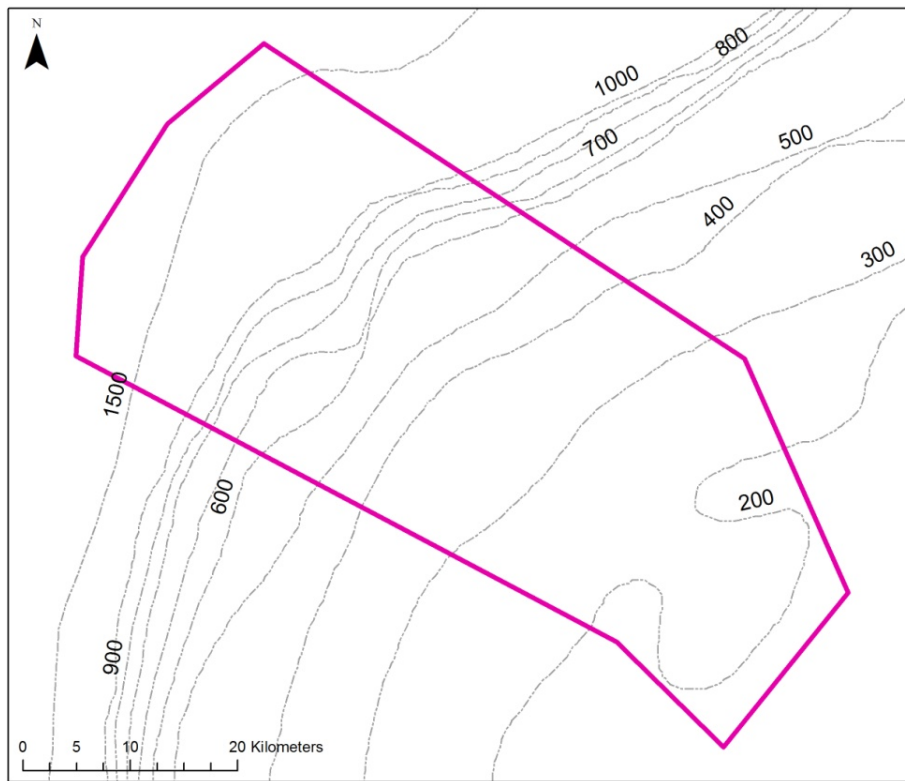
Normal contacts will be maintained with the Laboratory.

**Submitted:**

I. Gibb  
15 July 2016

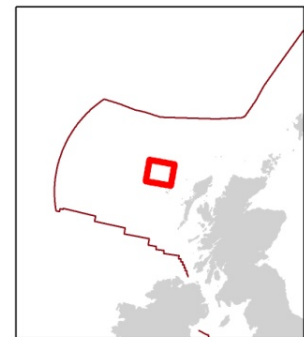
**Approved:**

I. Gibb  
15 July 2016



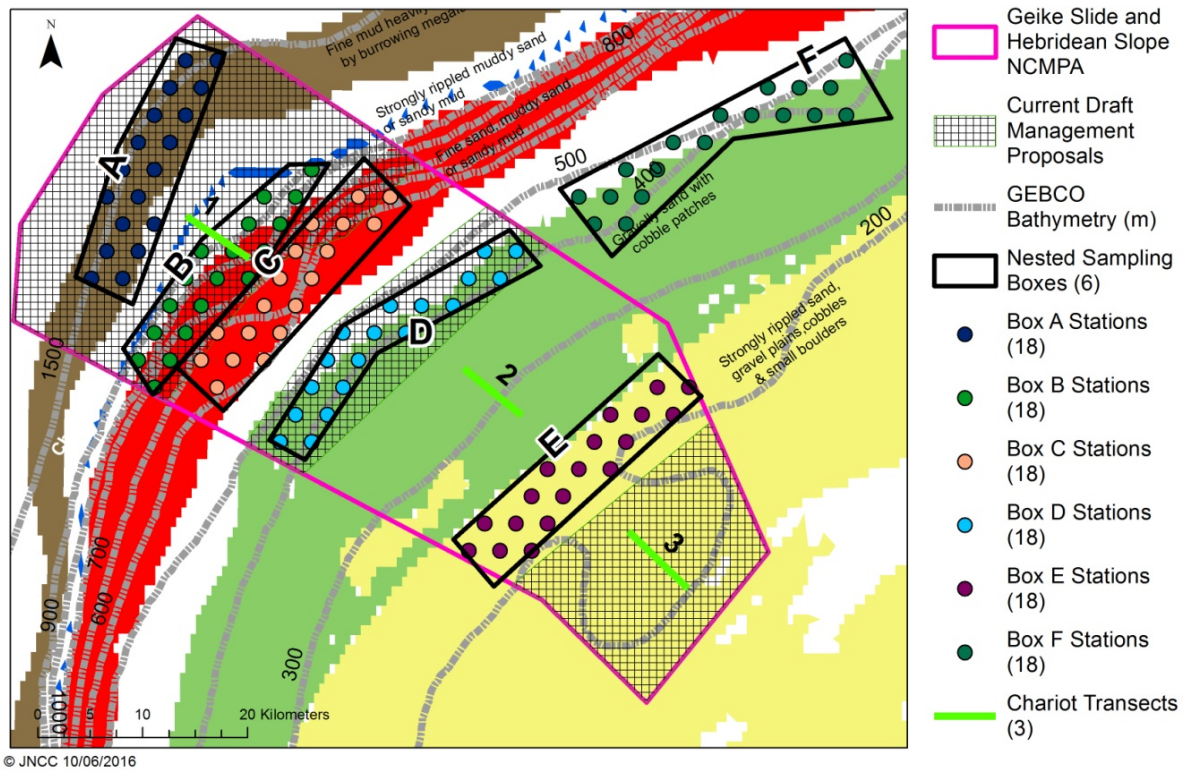
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World Vector Shoreline © US Defence Mapping Agency. Bathymetric contours © GEBCO. Not to be used for navigation.



-  Geike Slide and Hebridean Slope NCMPA
-  GEBCO Bathymetry (m)
-  UK & Ireland coastline
-  UK Exclusive Economic Zone

**Figure 1: Survey Location.**



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**Figure 2: Sampling locations**

**Table 1: Station Positions**

Box	StnCode	DecDeg_X	DecDeg_Y	Deg	DecMin	E/W	Deg	DecMin	N
Box A	GSH_A01	-9.6568	58.4262	9	39.4074	W	58	25.572	N
Box A	GSH_A02	-9.6315	58.4497	9	37.8912	W	58	26.982	N
Box A	GSH_A03	-9.6324	58.4963	9	37.9416	W	58	29.778	N
Box A	GSH_A04	-9.6054	58.4265	9	36.3252	W	58	25.59	N
Box A	GSH_A05	-9.6062	58.4731	9	36.3738	W	58	28.386	N
Box A	GSH_A06	-9.6070	58.5198	9	36.4218	W	58	31.188	N
Box A	GSH_A07	-9.5801	58.4499	9	34.8072	W	58	26.994	N
Box A	GSH_A08	-9.5809	58.4966	9	34.8534	W	58	29.796	N
Box A	GSH_A09	-9.5817	58.5432	9	34.9002	W	58	32.592	N
Box A	GSH_A10	-9.5548	58.4734	9	33.2874	W	58	28.404	N
Box A	GSH_A11	-9.5555	58.5200	9	33.3318	W	58	31.2	N
Box A	GSH_A12	-9.5563	58.5667	9	33.3762	W	58	34.002	N
Box A	GSH_A13	-9.5301	58.5435	9	31.8078	W	58	32.61	N

Box A	GSH_A14	-9.5308	58.5901	9	31.8504	W	58	35.406	N
Box A	GSH_A15	-9.5047	58.5669	9	30.282	W	58	34.014	N
Box A	GSH_A16	-9.5054	58.6136	9	30.3222	W	58	36.816	N
Box A	GSH_A17	-9.4792	58.5903	9	28.7538	W	58	35.418	N
Box A	GSH_A18	-9.4537	58.6138	9	27.2238	W	58	36.828	N
Box B	GSH_B01	-9.5786	58.3566	9	34.7154	N	58	21.396	W
Box B	GSH_B02	-9.5526	58.3334	9	33.156	N	58	20.004	W
Box B	GSH_B03	-9.5533	58.3800	9	33.1998	N	58	22.8	W
Box B	GSH_B04	-9.5273	58.3568	9	31.6398	N	58	21.408	W
Box B	GSH_B05	-9.5280	58.4035	9	31.6818	N	58	24.21	W
Box B	GSH_B06	-9.5020	58.3802	9	30.1218	N	58	22.812	W
Box B	GSH_B07	-9.5027	58.4269	9	30.162	N	58	25.614	W
Box B	GSH_B08	-9.4767	58.4037	9	28.602	N	58	24.222	W
Box B	GSH_B09	-9.4773	58.4503	9	28.6398	N	58	27.018	W
Box B	GSH_B10	-9.4513	58.4271	9	27.0798	N	58	25.626	W
Box B	GSH_B11	-9.4259	58.4505	9	25.5558	N	58	27.03	W
Box B	GSH_B12	-9.4000	58.4273	9	23.9982	N	58	25.638	W
Box B	GSH_B13	-9.4005	58.4739	9	24.03	N	58	28.434	W
Box B	GSH_B14	-9.3745	58.4507	9	22.4718	N	58	27.042	W
Box B	GSH_B15	-9.3750	58.4973	9	22.5018	N	58	29.838	W
Box B	GSH_B16	-9.3491	58.4741	9	20.9436	N	58	28.446	W
Box B	GSH_B17	-9.3236	58.4975	9	19.4136	N	58	29.85	W
Box B	GSH_B18	-9.2980	58.5209	9	17.8812	N	58	31.254	W
Box C	GSH_C01	-9.4761	58.3570	9	28.5642	N	58	21.42	W
Box C	GSH_C02	-9.4501	58.3338	9	27.0084	N	58	20.028	W
Box C	GSH_C03	-9.4507	58.3804	9	27.0444	N	58	22.824	W
Box C	GSH_C04	-9.4248	58.3572	9	25.4886	N	58	21.432	W
Box C	GSH_C05	-9.3994	58.3806	9	23.9664	N	58	22.836	W
Box C	GSH_C06	-9.3735	58.3573	9	22.4124	N	58	21.438	W
Box C	GSH_C07	-9.3740	58.4040	9	22.4418	N	58	24.24	W
Box C	GSH_C08	-9.3481	58.3807	9	20.8884	N	58	22.842	W
Box C	GSH_C09	-9.3486	58.4274	9	20.916	N	58	25.644	W
Box C	GSH_C10	-9.3227	58.4042	9	19.362	N	58	24.252	W
Box C	GSH_C11	-9.3231	58.4508	9	19.3878	N	58	27.048	W
Box C	GSH_C12	-9.2972	58.4275	9	17.8338	N	58	25.65	W
Box C	GSH_C13	-9.2976	58.4742	9	17.8578	N	58	28.452	W
Box C	GSH_C14	-9.2717	58.4509	9	16.3038	N	58	27.054	W
Box C	GSH_C15	-9.2462	58.4743	9	14.7714	N	58	28.458	W
Box C	GSH_C16	-9.2206	58.4977	9	13.2372	N	58	29.862	W

Box C	GSH_C17	-9.1948	58.4744	9	11.6856	N	58	28.464	W
Box C	GSH_C18	-9.1692	58.4978	9	10.149	N	58	29.868	W
Box D	GSH_D01	-9.3472	58.2874	9	20.8332	N	58	17.244	W
Box D	GSH_D02	-9.3219	58.3108	9	19.311	N	58	18.648	W
Box D	GSH_D03	-9.2961	58.2875	9	17.7636	N	58	17.25	W
Box D	GSH_D04	-9.2965	58.3342	9	17.787	N	58	20.052	W
Box D	GSH_D05	-9.2707	58.3109	9	16.2396	N	58	18.654	W
Box D	GSH_D06	-9.2710	58.3576	9	16.2606	N	58	21.456	W
Box D	GSH_D07	-9.2452	58.3343	9	14.7132	N	58	20.058	W
Box D	GSH_D08	-9.2455	58.3810	9	14.7324	N	58	22.86	W
Box D	GSH_D09	-9.2198	58.3577	9	13.185	N	58	21.462	W
Box D	GSH_D10	-9.1942	58.3811	9	11.6544	N	58	22.866	W
Box D	GSH_D11	-9.1687	58.4044	9	10.122	N	58	24.264	W
Box D	GSH_D12	-9.1429	58.3811	9	8.5764	N	58	22.866	W
Box D	GSH_D13	-9.1174	58.4045	9	7.0422	N	58	24.27	W
Box D	GSH_D14	-9.0660	58.4045	9	3.9624	N	58	24.27	W
Box D	GSH_D15	-9.0404	58.4279	9	2.424	N	58	25.674	W
Box D	GSH_D16	-9.0147	58.4512	9	0.8832	N	58	27.072	W
Box D	GSH_D17	-8.9890	58.4279	8	59.3418	N	58	25.674	W
Box D	GSH_D18	-8.9633	58.4512	8	57.7992	N	58	27.072	W
Box E	GSH_E01	-9.0401	58.1945	9	2.4078	N	58	11.67	W
Box E	GSH_E02	-9.0146	58.2179	9	0.8778	N	58	13.074	W
Box E	GSH_E03	-8.9891	58.1945	8	59.346	N	58	11.67	W
Box E	GSH_E04	-8.9636	58.2179	8	57.8136	N	58	13.074	W
Box E	GSH_E05	-8.9381	58.1945	8	56.2842	N	58	11.67	W
Box E	GSH_E06	-8.9380	58.2412	8	56.2794	N	58	14.472	W
Box E	GSH_E07	-8.9125	58.2178	8	54.75	N	58	13.068	W
Box E	GSH_E08	-8.9124	58.2645	8	54.7428	N	58	15.87	W
Box E	GSH_E09	-8.8869	58.2412	8	53.2134	N	58	14.472	W
Box E	GSH_E10	-8.8613	58.2645	8	51.675	N	58	15.87	W
Box E	GSH_E11	-8.8356	58.2878	8	50.1348	N	58	17.268	W
Box E	GSH_E12	-8.8101	58.2644	8	48.6072	N	58	15.864	W
Box E	GSH_E13	-8.8099	58.3111	8	48.5922	N	58	18.666	W
Box E	GSH_E14	-8.7844	58.2877	8	47.0646	N	58	17.262	W
Box E	GSH_E15	-8.7587	58.3110	8	45.5202	N	58	18.66	W
Box E	GSH_E16	-8.7329	58.3343	8	43.974	N	58	20.058	W
Box E	GSH_E17	-8.7075	58.3109	8	42.4488	N	58	18.654	W
Box E	GSH_E18	-8.6817	58.3342	8	40.9002	N	58	20.052	W

Box F	GSH_F01	-8.8603	58.4978	8	51.6198	N	58	29.868	W
Box F	GSH_F02	-8.8347	58.4745	8	50.0826	N	58	28.47	W
Box F	GSH_F03	-8.8089	58.4978	8	48.5316	N	58	29.868	W
Box F	GSH_F04	-8.7833	58.4744	8	46.9962	N	58	28.464	W
Box F	GSH_F05	-8.7830	58.5210	8	46.9788	N	58	31.26	W
Box F	GSH_F06	-8.7574	58.4977	8	45.4434	N	58	29.862	W
Box F	GSH_F07	-8.7315	58.5210	8	43.8888	N	58	31.26	W
Box F	GSH_F08	-8.7055	58.5442	8	42.3318	N	58	32.652	W
Box F	GSH_F09	-8.6540	58.5441	8	39.24	N	58	32.646	W
Box F	GSH_F10	-8.6280	58.5674	8	37.6788	N	58	34.044	W
Box F	GSH_F11	-8.5764	58.5672	8	34.5846	N	58	34.032	W
Box F	GSH_F12	-8.5503	58.5904	8	33.0198	N	58	35.424	W
Box F	GSH_F13	-8.5248	58.5670	8	31.4904	N	58	34.02	W
Box F	GSH_F14	-8.4987	58.5903	8	29.9232	N	58	35.418	W
Box F	GSH_F15	-8.4733	58.5668	8	28.3962	N	58	34.008	W
Box F	GSH_F16	-8.4471	58.5900	8	26.8272	N	58	35.4	W
Box F	GSH_F17	-8.4217	58.5666	8	25.302	N	58	33.996	W
Box F	GSH_F18	-8.4209	58.6133	8	25.2558	N	58	36.798	W

**Table 2**

Chariot Transects

Stn	Deg	DecMin	E/W	Deg	DecMin	N		Deg	DecMin	E/W	Deg	DecMin	N
Tow1	9	44.091	N	58	23.034	W		9	36.7962	N	58	22.374	W
Tow2	9	3.6978	N	58	20.082	W		8	56.4612	N	58	19.614	W
Tow3	8	46.873	N	58	12.66	W		8	41.0976	N	58	9.714	W