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MRV *Scotia*

Survey 1517S

PROGRAMME

20 October – 9 November 2017

Ports

Loading: Aberdeen, 16 October, 2017
Half Landing: Lerwick, 30 October 2017 (Flexible)
Unloading: Aberdeen, 9 November 2017

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

		Part 1	Part 2
J Drewery	MSS	* SIC	
P Boulcott	MSS	*	* SIC
N Collie	MSS	*	
J Hunter	MSS		*
M Watson	MSS	*	*
J O'Conner	JNCC	*	*
J Taylor	JNCC	*	*
T Noble-James	JNCC	*	*
H Van Rein	JNCC	*	
B Cioffi	JNCC	*	
N Golding	JNCC		*
L Cornick	JNCC		*
H Hinchen	JNCC		*

Estimated days by project: 21 days – C423 (20376)

Gear

TV drop frame and wiring harness
TV sledge and wiring harness
Valeport mini-CTD
0.25m^2 USNEL BSL Box core
0.1m mini Hamon grab
0.1m Day Grab (backup)
0.1m Van Veen Grab (backup)

Background

Marine Scotland Science (MSS) and the Joint Nature Conservation Committee (JNCC) will undertake an offshore seabed survey in the Northeast Faroe-Shetland Channel (NEF hereafter), Scottish Nature Conservation Marine Protected Areas (NCMPA) and the Wyville Thomson Ridge (WTR) on the Marine Research Vessel (MRV) *Scotia* (Figure 1). Habitats within the NEF MPA vary down the slope with the descent into deeper (arctic) water. In particular the FSC survey will focus on deep-sea sponge aggregations that are expected to be found between depths of 400 and 600 m. The MPA represents the variation in sand, mud and gravel habitat types present, and the animal communities they support.

Objectives

1. Conduct a Type 1 (Henry and Roberts, 2014) monitoring survey of the NEF NCMPA focusing sampling within boxes positioned to allow for sampling to occur across the range of depths, biological zones and proposed management measures at the site. This will include visual (camera) and physical (box corer or grab) sampling (Figures 2 and 3). Visual data will be collected from areas understood to contain deep-sea sponge aggregations within the site boundary (Box A) and from adjacent areas outside the site (Boxes B and C) along the same depth contours. Physical samples will be obtained for further for further characterisation of the wider seabed within the site (Box D). Environmental data will be collected during visual sampling.

2. Conduct a Type 1 monitoring survey of the WTR (Figures 4 and 5) focusing on sampling within boxes A, B and C which are positioned to allow for sampling to occur across the range of depths, biological zones and proposed management measures at the site. The focus will be on visual (camera) methods only. Environmental data will be collected during visual sampling.

Narrative

All staff will join MRV *Scotia* either on the evening of 19 or early on 20 October so allowing the vessel to depart Aberdeen Harbour as early as possible on 20 October. After completion of safety drills and exercises, there will be shakedown deployments of the chariot, box corer and Harmon grabs. Thereafter, *Scotia* will proceed north towards the NEF area.

In boxes A-C four long (~3km) chariot tows (Figure 2) will be used to characterise the epifaunal communities present within the boxes and 16 short (200m) drop-frame camera transect stations (not illustrated) will facilitate collection of high definition video and still images. In box D 60

stations have been generated of which a core 30 will be prioritised for physical sampling. Initially the vessel will sample with chariot and box core/Harmon grab in alternate 12 hour shifts until all chariot runs are completed. Thereafter, sampling may concentrate on the dropframe runs until these are completed with the remainder of the time used for remaining box core/Harmon grab deployments. Where time permits sampling of suitable sponge aggregations may be undertaken in boxes B or C using box core or Harmon grab.

Upon completion of work at NEF the vessel will proceed to WTR and visually sample in box A using the drop frame using a systematic grid approach (Figure 4). Sampling will also focus on the area within and adjacent to a proposed static gear closure to determine the distribution and extent of Vulnerable Marine Ecosystems (VMEs), including sponges and corals (Figure 5).

Tables 1-3 show positional information for the visual aspects of the survey. Positions of physical sampling stations and all contingency stations will be available to FRV *Scotia*.

For the purposes of this survey the NEF will be prioritised over the WTR and visual sampling will be prioritised over physical sampling.

Contingency plans in NEF to undertake further physical sampling in box D where moderate conditions preclude camera work. In WTR contingency for moderate weather is sampling with Harmon grab at a predefined location to the west of the site. In both cases contingency includes transit to already identified inshore survey locations in the event of prolonged unworkable conditions.

The vessel will undertake a port call in Scrabster around Monday 30 October (date flexible) to exchange scientific staff.

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

Normal contacts will be maintained with the Laboratory.

Submitted:
J. Drewery
10 October 2017

Approved:
I. Gibb
13 October 2017

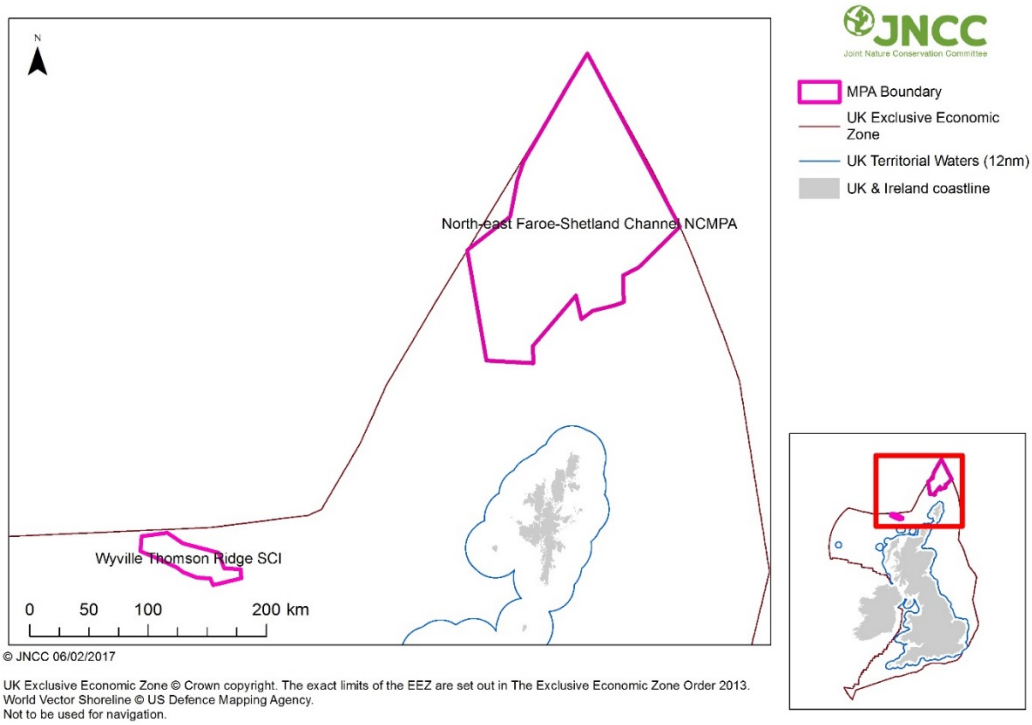

Figure 1: Location of Marine Protected Areas to be visited by 1517S survey.

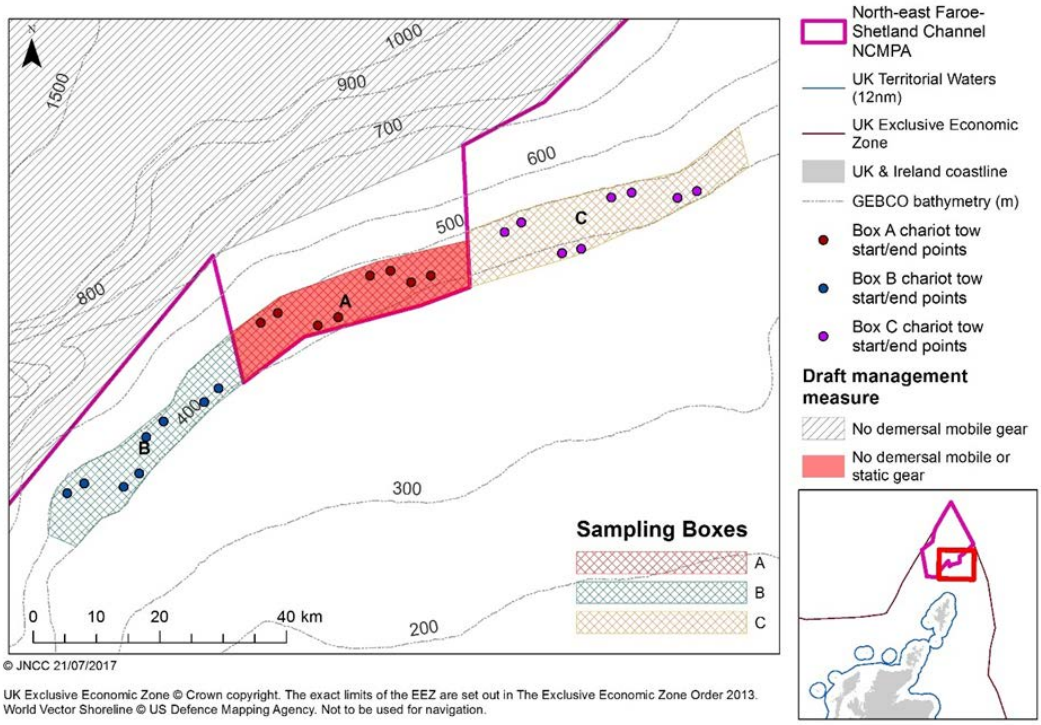

Figure 2: Sampling boxes A, B and C with chariot tow start and end points for North-east Faroe-Shetland Channel NCMPA.

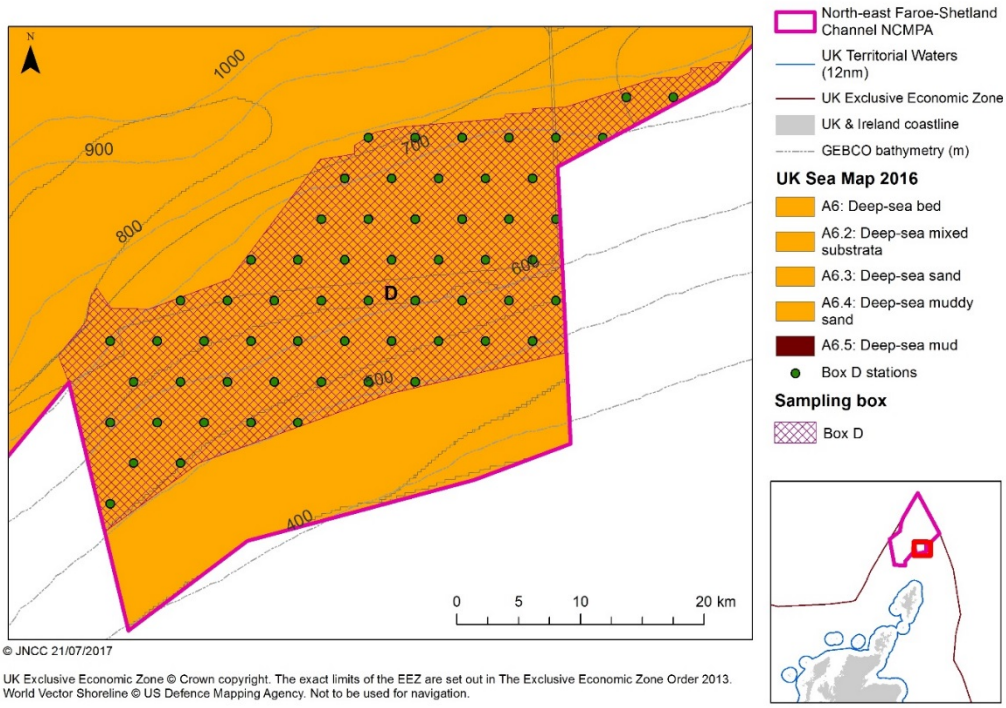

Figure 3. Physical sampling stations (60) generated for NEF NCMPA in Box D (purple). Note 30 of these stations are considered core with a further 30 contingency only.

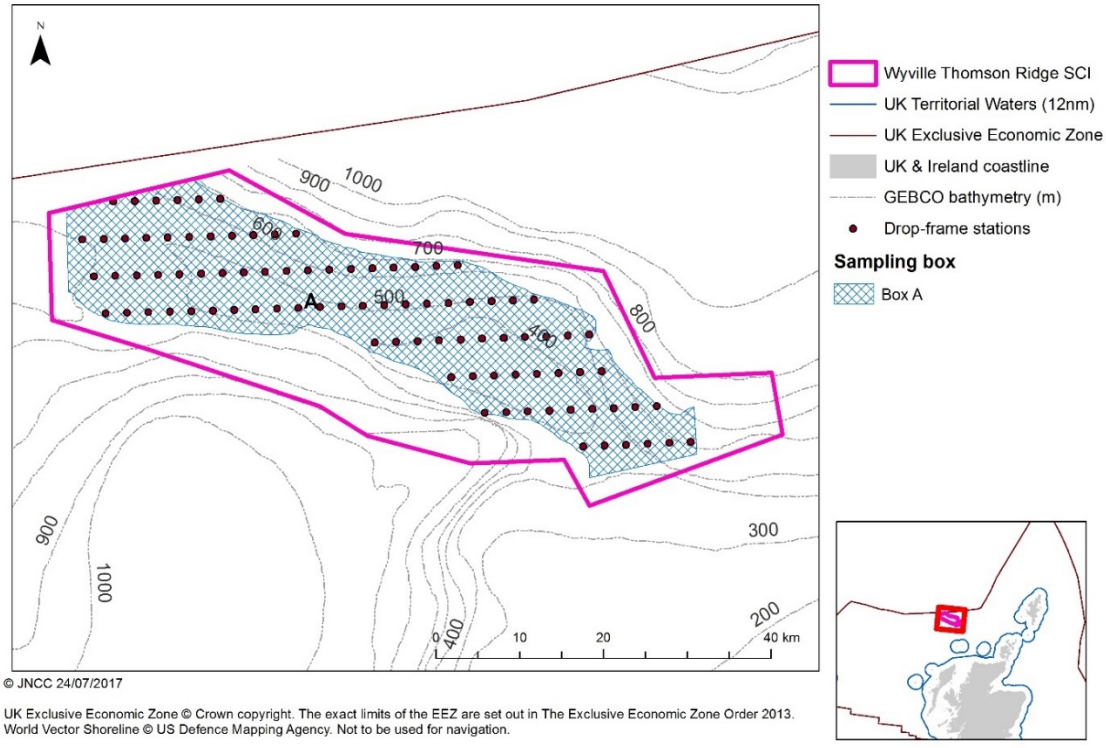

Figure 4. WTR sampling box A and drop-frame stations.

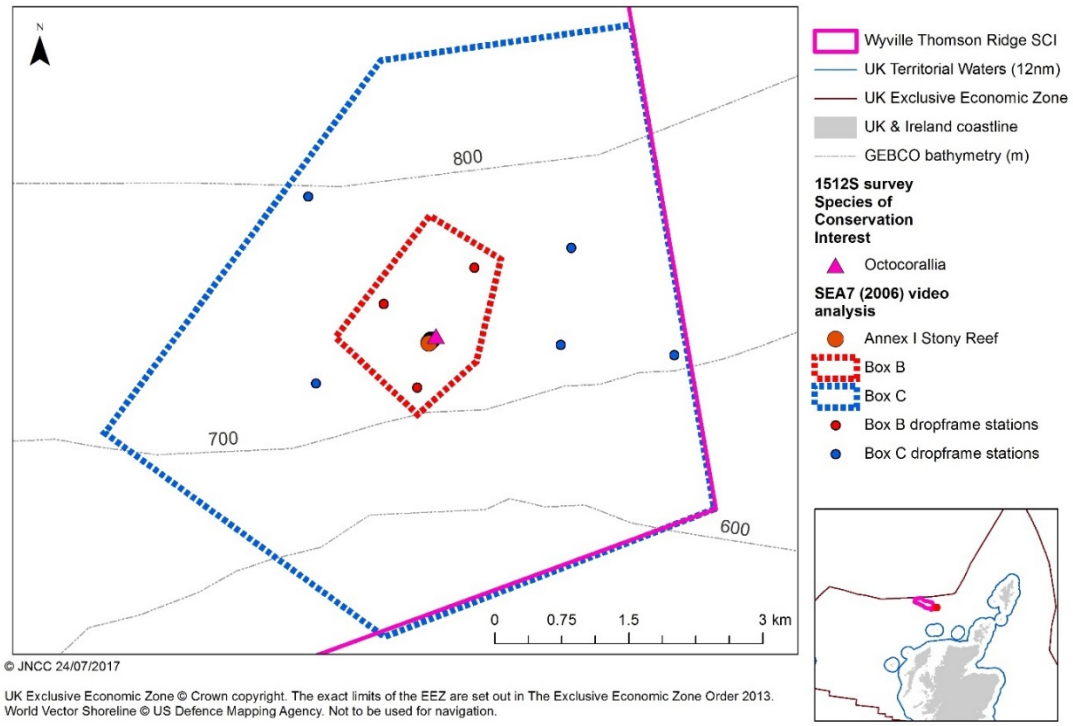

Figure 5. WTR sampling boxes B and C along with existing data and drop-frame stations.

Table 1: NEF Chariot tows and positions.

Stn Code	Deployment						Recovery					
Box A	Deg											
NEF_Tow_A01	61	57.268	N	0	37.968	W	61	58.047	N	0	34.842	W
NEF_Tow_A02	61	56.861	N	0	27.718	W	61	57.465	N	0	23.990	W
NEF_Tow_A03	62	0.908	N	0	17.895	W	62	1.251	N	0	14.178	W
NEF_Tow_A04	62	0.183	N	0	10.523	W	62	0.686	N	0	6.927	W
Box B												
NEF_Tow_B01	61	43.293	N	1	13.743	W	61	44.086	N	1	10.655	W
NEF_Tow_B02	61	43.705	N	1	3.603	W	61	44.801	N	1	0.763	W
NEF_Tow_B03	61	47.890	N	0	59.275	W	61	49.142	N	0	56.121	W
NEF_Tow_B04	61	50.701	N	0	48.649	W	61	51.817	N	0	46.022	W
Box C												
NEF_Tow_C01	62	4.079	N	0	6.789	E	62	4.841	N	0	9.945	E
NEF_Tow_C02	62	2.049	N	0	17.017	E	62	2.325	N	0	20.493	E
NEF_Tow_C03	62	6.553	N	0	26.445	E	62	6.877	N	0	30.181	E
NEF_Tow_C04	62	6.225	N	0	38.439	E	62	6.706	N	0	42.059	E

Table 2: NEF Dropframe stations and positions.

Stn Code	Deg	DecMin	N	Deg	DecMin	E/W
Box A						
NEF_A01	61	57.710	N	0	36.368	W
NEF_A02	62	1.068	N	0	16.077	W
NEF_A03	62	0.519	N	0	8.663	W
NEF_A04	61	57.172	N	0	25.510	W
NEF_A05	61	56.608	N	0	40.328	W
NEF_A06	61	59.047	N	0	31.353	W
NEF_A07	61	59.852	N	0	27.042	W
NEF_A08	62	0.499	N	0	22.013	W
NEF_A09	61	54.385	N	0	38.684	W
NEF_A10	61	56.026	N	0	33.050	W
NEF_A11	61	58.003	N	0	19.744	W
NEF_A12	62	1.060	N	0	3.211	W
NEF_A13	61	58.959	N	0	16.145	W
NEF_A14	61	59.802	N	0	12.673	W
NEF_A15	62	1.962	N	0	10.896	W
NEF_A16	62	2.562	N	0	5.434	W
Box B						
NEF_B01	61	43.728	N	1	12.023	W
NEF_B02	61	48.573	N	0	57.578	W
NEF_B03	61	44.251	N	1	2.313	W
NEF_B04	61	51.322	N	0	47.316	W
NEF_B05	61	41.637	N	1	15.627	W
NEF_B06	61	44.859	N	1	7.086	W
NEF_B07	61	46.564	N	1	2.587	W
NEF_B08	61	50.693	N	0	52.610	W
NEF_B09	61	52.391	N	0	50.681	W
NEF_B10	61	54.081	N	0	47.600	W
NEF_B11	61	49.452	N	0	50.586	W
NEF_B12	61	48.159	N	0	53.629	W
NEF_B13	61	46.275	N	0	57.249	W
NEF_B14	61	42.370	N	1	5.195	W
NEF_B15	61	41.350	N	1	9.640	W
NEF_B16	61	39.564	N	1	12.565	W
Box C						
NEF_C01	62	4.459	N	0	8.347	E
NEF_C02	62	6.794	N	0	28.457	E
NEF_C03	62	2.157	N	0	18.821	E
NEF_C04	62	6.421	N	0	40.138	E
NEF_C05	62	3.373	N	0	2.688	E

NEF_C06	62	5.709	N	0	14.410	E
NEF_C07	62	6.291	N	0	21.398	E
NEF_C08	62	7.232	N	0	35.057	E
NEF_C09	62	8.661	N	0	43.077	E
NEF_C10	62	10.457	N	0	47.875	E
NEF_C11	62	2.230	N	0	6.594	E
NEF_C12	62	3.161	N	0	13.272	E
NEF_C13	62	3.936	N	0	19.982	E
NEF_C14	62	4.489	N	0	26.802	E
NEF_C15	62	5.032	N	0	33.664	E
NEF_C16	62	7.788	N	0	46.596	E

Table 3 WTR Dropframe Stations.

Stn Code	Deg	DecMin		Deg	DecMin	
Box A						
WTR_A001	60	4.519	N	7	26.152	W
WTR_A002	60	2.628	N	7	24.087	W
WTR_A003	60	6.359	N	7	23.906	W
WTR_A004	60	0.736	N	7	22.026	W
WTR_A005	60	4.467	N	7	21.841	W
WTR_A006	60	2.575	N	7	19.780	W
WTR_A007	60	6.306	N	7	19.591	W
WTR_A008	60	0.682	N	7	17.723	W
WTR_A009	60	4.413	N	7	17.531	W
WTR_A010	60	2.519	N	7	15.474	W
WTR_A011	60	6.250	N	7	15.277	W
WTR_A012	60	0.625	N	7	13.421	W
WTR_A013	60	4.356	N	7	13.220	W
WTR_A014	60	8.086	N	7	13.019	W
WTR_A015	59	58.730	N	7	11.372	W
WTR_A016	60	2.461	N	7	11.168	W
WTR_A017	60	6.192	N	7	10.963	W
WTR_A018	60	0.566	N	7	9.119	W
WTR_A019	60	4.297	N	7	8.910	W
WTR_A020	60	8.027	N	7	8.701	W
WTR_A021	59	58.670	N	7	7.074	W
WTR_A022	60	2.401	N	7	6.862	W
WTR_A023	60	6.131	N	7	6.649	W
WTR_A024	60	0.505	N	7	4.817	W
WTR_A025	60	4.235	N	7	4.601	W
WTR_A026	60	7.966	N	7	4.383	W
WTR_A027	59	58.608	N	7	2.777	W

WTR_A028	60	2.338	N	7	2.556	W
WTR_A029	60	6.069	N	7	2.335	W
WTR_A030	60	0.441	N	7	0.516	W
WTR_A031	60	4.171	N	7	0.291	W
WTR_A032	59	58.543	N	6	58.480	W
WTR_A033	60	2.273	N	6	58.251	W
WTR_A034	60	6.004	N	6	58.022	W
WTR_A035	60	0.375	N	6	56.215	W
WTR_A036	60	4.105	N	6	55.982	W
WTR_A037	60	2.206	N	6	53.946	W
WTR_A038	60	5.936	N	6	53.709	W
WTR_A039	60	0.307	N	6	51.914	W
WTR_A040	60	4.036	N	6	51.673	W
WTR_A041	59	58.406	N	6	49.886	W
WTR_A042	60	2.136	N	6	49.642	W
WTR_A043	60	0.236	N	6	47.614	W
WTR_A044	60	3.966	N	6	47.365	W
WTR_A045	59	58.335	N	6	45.590	W
WTR_A046	60	2.064	N	6	45.338	W
WTR_A047	59	56.433	N	6	43.570	W
WTR_A048	60	0.163	N	6	43.314	W
WTR_A049	60	3.892	N	6	43.057	W
WTR_A050	59	58.261	N	6	41.295	W
WTR_A051	60	1.990	N	6	41.034	W
WTR_A052	59	56.358	N	6	39.279	W
WTR_A053	60	0.087	N	6	39.015	W
WTR_A054	59	54.455	N	6	37.267	W
WTR_A055	59	58.184	N	6	36.999	W
WTR_A056	60	1.914	N	6	36.731	W
WTR_A057	59	56.280	N	6	34.988	W
WTR_A058	60	0.010	N	6	34.715	W
WTR_A059	59	54.376	N	6	32.980	W
WTR_A060	59	58.105	N	6	32.704	W
WTR_A061	60	1.835	N	6	32.428	W
WTR_A062	59	56.201	N	6	30.697	W
WTR_A063	59	59.930	N	6	30.417	W
WTR_A064	59	54.295	N	6	28.693	W
WTR_A065	59	58.024	N	6	28.410	W
WTR_A066	60	1.753	N	6	28.125	W
WTR_A067	59	52.390	N	6	26.693	W
WTR_A068	59	56.119	N	6	26.406	W
WTR_A069	59	59.847	N	6	26.118	W
WTR_A070	59	54.212	N	6	24.407	W

WTR_A071	59	57.941	N	6	24.116	W
WTR_A072	59	52.305	N	6	22.411	W
WTR_A073	59	56.034	N	6	22.117	W
WTR_A074	59	59.763	N	6	21.820	W
WTR_A075	59	50.398	N	6	20.420	W
WTR_A076	59	54.127	N	6	20.121	W
WTR_A077	59	57.855	N	6	19.822	W
WTR_A078	59	48.490	N	6	18.432	W
WTR_A079	59	52.219	N	6	18.130	W
WTR_A080	59	55.947	N	6	17.827	W
WTR_A081	59	59.676	N	6	17.523	W
WTR_A082	59	50.310	N	6	16.142	W
WTR_A083	59	54.039	N	6	15.836	W
WTR_A084	59	57.767	N	6	15.529	W
WTR_A085	59	52.130	N	6	13.849	W
WTR_A086	59	55.858	N	6	13.538	W
WTR_A087	59	50.220	N	6	11.865	W
WTR_A088	59	53.949	N	6	11.551	W
WTR_A089	59	52.039	N	6	9.568	W
WTR_A090	59	50.128	N	6	7.589	W
WTR_A091	59	51.945	N	6	5.288	W
Box B						
WTR_B001	59	52.515	N	5	56.750	W
WTR_B002	59	52.323	N	5	57.857	W
WTR_B003	59	51.811	N	5	57.503	W
Box C						
WTR_C001	59	51.935	N	5	54.408	W
WTR_C002	59	51.864	N	5	58.711	W
WTR_C003	59	52.608	N	5	55.580	W
WTR_C004	59	52.029	N	5	55.759	W
WTR_C005	59	52.989	N	5	58.700	W

References

HENRY, L.A. & ROBERTS, J.M. 2014. Applying the OSPAR habitat definition of deep-sea sponge aggregations to verify suspected records of the habitat in UK waters. JNCC Report No. 508