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No. 470**

Seabed imagery analysis from three Scottish offshore surveys: 2011 MSS IBTSQ3 survey, 2011 1111s FRV Scotia Rona-Windsock survey and 2011 MSS Rockall survey (2012)

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Acknowledgment

This report was prepared from analysis conducted in 2012.

Summary

In 2012 Marine EcoSol analysed imagery from three Scottish offshore surveys undertaken by the JNCC and Marine Scotland Science (MSS) staff in 2011, in order to locate Priority Marine Features (PMFs) in Scottish waters. One of the surveys would also inform evidence for the Marine Conservation Zones (MCZs) project in English waters.

The three surveys analysed were: the 2011 MSS IBTSQ3 survey (IBTSQ3), the 2011 1111s FRV Scotia Rona-Windsock survey and the 2011 MSS Rockall survey (Rockall). Both towed video data and still image data from all of the surveys was analysed, except for the Rockall survey which had no stills associated with it. Following data analysis all data was entered into Marine Recorder v4 and mapped with ArcView GIS.

Imagery from the 2011 MSS IBTSQ3 survey (IBTSQ3) included towed video from 38 tows, totalling 17 hours and 46 minutes of footage and 950 stills. Block A of the 2011 1111s FRV Scotia Rona-Windsock survey (Windsock A) included 31 video samples and 824 stills. Block B of the 2011 1111s FRV Scotia Rona-Windsock survey (Windsock B) included 18 video samples and 570 stills. Imagery from the 2011 MSS Rockall survey (Rockall) included video from seven tows, totalling 23 hours and 12 minutes of footage. Although the footage was not generally suitable for distinguishing individual taxa, it was considered suitable for identifying Annex 1 reef habitats (the survey's primary purpose) and some of the broad-scale offshore Scottish MPA project search features.

Within each of the survey areas, Annex 1 reef features, MPA search features, species and habitats of conservation importance have been highlighted and all biotopes recorded. Where the data didn't fit with current biotopes, new biotopes have been suggested.

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1 Introduction

Marine EcoSol was contracted by the Joint Nature Conservation Committee (JNCC) in January 2012 to analyse photographic imagery from the following three Scottish offshore surveys undertaken by the JNCC and Marine Scotland Science (MSS) staff in 2011:

1. 2011 MSS IBTSQ3 survey (IBTSQ3)
2. 2011 1111s FRV Scotia Rona-Windsock survey (Windsock)
3. 2011 MSS Rockall survey (Rockall)

JNCC joined the MSS IBTS Quarter 3 survey on the *FRV Scotia* in the North Sea in July/Aug 2011. Video and stills data were collected opportunistically by JNCC during the trawling downtime. This work provided broadscale coverage of areas of mostly mud and sandy habitats with the intention that the data be used to locate Priority Marine Features (PMFs) in Scottish waters, and inform evidence for the Marine Conservation Zone (MCZ) Project in English waters.

Survey 1111s was a dedicated MPA-related survey on the *FRV Scotia* to gather data for the Scottish Marine Protected Area (MPA) project. Fourteen survey areas were selected, nested within two larger survey blocks (Block A and B). Within these 14 areas (nine in Block A, five in Block B), 100% coverage of multibeam was acquired along with groundtruthing data including benthic grabs and seabed imagery. Seabed imagery comprised towed video and photos and the data from these will be used to locate PMFs in Scottish waters.

During August and September 2011 JNCC took part in a MSS survey to Rockall Bank and undertook nine video transects during fish survey downtime. Seven of the nine surveys lie within Scottish waters and data from these will be used to locate Priority Marine Features (PMFs). It should be noted that the survey sampling strategy was to cover significant areas to locate Annex 1 Reef. As such the tows were longer and done at a faster pace than the imagery acquisition of the other surveys.

2 Methods

Imagery from the three surveys comprised video footage and additionally stills from the IBTSQ3 and Windsock surveys. All imagery was captured with cameras either mounted in a downward-angled, forward-facing direction, or a vertical orientation. The time on both stills and video cameras was set to Coordinated Universal Time (UTC). Still images were taken approximately every minute throughout the video tows and in some cases additional stills were taken opportunistically when a feature of interest was presented.

2.1 Imagery Processing

Prior to analysis seabed imagery required processing as follows:

2.1.1 Stills processing

Still images were supplied in two different file formats: images from the IBTSQ3 survey were supplied in the Joint Photographic Experts Group compressed (JPEG) format; and images from the Windsock survey were supplied in Cannon's camera raw image file format (CRW). JPEG was the analysis preferred format as all images could be quickly previewed in Windows Explorer (thumbnail view) and no specialist software was required to open or edit the images. Microsoft Picture Manager was used to view and edit all JPEG images. CWR format images were not reviewable in Windows Explorer and required more specialist

software such as Adobe Bridge and Adobe Photoshop to preview and edit the images. For speed and ease of viewing the images, all CRW files were batch converted to JPEG format at the highest image quality (minimum lossy compression) using Adobe Bridge software. Stills taken during the Windsock survey were named sequentially in the order captured, included the station name (video tow) within the filename and were also stored in folders named by video tow. This was the preferred filing and naming convention.

Stills taken during the IBTSQ3 survey were named sequentially in the order captured and stored in folders named by date. As multiple video tows were undertaken on the same day all stills were rearranged and filed by video tow. Whilst rearranging the stills by video tow, it became apparent the stills had been automatically output to a computer and filed using British Summer Time (BST) rather than UTC. As a result any photo taken after 22:59 UTC was stored in the folder with the next days date.

2.1.2 Video processing

Video footage was supplied in two different formats. Video from the IBTSQ3 survey was supplied as Digital Video (DV) tapes, with each tape storing multiple video tows. All IBTSQ3 DV tapes were captured to PC using a Sony DV camcorder and Adobe Premiere software, the encoding system used was Phase Alternating Line (PAL). All files were output from Adobe Premiere in Audio Video Interleaved (AVI) format.

Video from the Windsock and Rockall surveys was supplied digitally in Video Object (VOB) DVD format, a format not supported by Adobe Premiere, the software used to edit entire video tows into habitat subsections. Following web searches (Url1) and comparing the image quality before and after, the VOB file extensions were changed to MPG for all video files and then all MPG files were converted to AVI files using Adobe Premiere software.

2.2 Imagery analysis

The first stage of image analysis required all video clips be viewed once and split into habitats based upon broad changes in substrate composition and associated fauna. Resulting habitat splits were aimed at EUNIS level 4 (or higher) habitat type. Where video tows comprised multiple habitats, the filename of each resulting video clip was appended with V1, V2, V3 etc to indicate, firstly that it is a video file, and secondly the habitat (sample) number within the video tow. The filename was then used as the unique sample reference throughout analysis and data entry. Once all video had been split into habitats, the corresponding stills were also divided using the habitat start and end times from the video, and the 'image created' time, from the file properties for the stills.

To ensure all surveyors undertook analysis and recording in the same way, and to minimise inter-surveyor variability, the first few days of analysis were used for Quality Assurance (QA) purposes. The team, whilst working together, agreed a suitable analysis and recording protocol and then as a group analysed the first video sample and several corresponding stills. The resulting recording protocol was written out and a copy kept with each surveyor as a reminder. Additionally a recording proforma was prepared (Appendix 1) to record all Marine Recorder v4 (MR) 'required' information, relevant MR 'optional' fields and also additional non-MR fields required for the GIS element of the project. Once all surveyors were happy with the recording protocol and data entry spreadsheet, the imagery was divided between surveyors and analysed individually, although regular discussion was maintained between the surveyors throughout analysis. Division of the imagery was managed so that the same surveyor analysed all imagery from a single survey area. The exception to this rule was with the Windsock survey, where imagery was split by Block (A and B), with a different surveyor analysing imagery from each Block.

As a further QA measure, surveyors took screen grabs of taxa from stills and video and organised these by phyla. Screen grabs were taken of both identifiable taxa and also taxa that presented ID difficulties either due to image clarity or actual ID uncertainty. At an appropriate point during the analysis stage, the surveyors met as a group reviewing the ID uncertainty images, and agreeing how to deal with them, and the appropriate taxonomic level that they should be recorded to.

2.2.1 Stills analysis

After discussion with staff from the JNCC it was decided to analyse all usable stills without any sub-sampling. Recording during stills analysis was in digital format into the data entry spreadsheet. The filename of each image (including the video tow and image number) was used as unique sample reference for all analysis and data entry. All stills corresponding to a single video sample were analysed consecutively prior to analysis of the video clip.

Analysis of each still required the following process:

1. Briefly describing the habitat in one sentence.
2. Recording whether the still was usable for assessing both the habitat and any fauna.
3. Recording the time, date, depth and GPS position the photo was taken.
4. Visually assessing the substrate composition using percent cover for each MNCR substrate type.
5. Recording the presence/absence and type of any Scottish MPA project search feature and any Annex 1 reef habitat.
6. Semi-quantitatively assessing rock features, using the MNCR 1 to 5 scale for each feature; recording the presence of other MNCR rock features such as 'Sediment on Rock' or 'Boulders/Cobbles on Sediment'; and recording the percentage of the rocky seabed that fell within each of the five MNCR inclination categories.
7. Semi-quantitatively assessing sediment features, using the MNCR 1 to 5 scale for each feature and recording the presence of other MNCR sediment features such as 'Mounds or Casts', 'Burrows or Holes', 'Tubes', 'Waves', 'Ripples'.
8. Recording the presence of any visible impacts or other modifiers, including trawl marks, discarded fishing gear, visible physical damage, evidence of strong currents.
9. Identifying, quantifying and recording all taxa to the lowest possible taxonomic level using the SACFOR scale and MNCR abundance guidance. When identification of fauna was uncertain, this was noted. Count data was recorded instead of SACFOR when a single large animal was present, and where the MNCR SACFOR abundance guidance suggested this animal be categorised Common or abundant based on its size. In cases where taxa could not be identified to a useful taxonomic level, additional descriptive information was included with details of life-forms present.
10. Assigning a biotope to the still as described in section 2.3.

2.2.2 Video analysis

Recording results from video analysis was found to be easier when using printed data entry sheets, rather than directly into the spreadsheet. Analysis of video clips required each clip to be viewed three times as follows:

First view of the video clip included:

1. Briefly describing the habitat in one sentence.
2. Recording whether the video was usable for assessing the habitat and fauna.
3. Recording the start and end times, date, depths and GPS positions for the video clip.
4. Visually assessing the substrate composition using percent cover for each MNCR substrate type.
5. Semi-quantitatively assessing rock features, using the MNCR 1 to 5 scale for each feature; recording the presence of other MNCR rock features such as 'Sediment on Rock' or 'Boulders/Cobbles on Sediment'; and recording the percentage of the rocky seabed that fell within each of the five MNCR inclination categories.
6. Semi-quantitatively assessing sediment features, using the MNCR 1 to 5 scale for each feature and recording the presence of other MNCR sediment features such as 'Mounds or Casts', 'Burrows or Holes', 'Tubes', 'Waves', 'Ripples'.

Second view of the video clip included:

7. Identifying, quantifying and recording all taxa to the lowest possible taxonomic level using the SACFOR scale and MNCR abundance guidance. When identification of fauna was uncertain, this was noted. In cases where taxa could not be identified to a useful taxonomic level, additional descriptive information was included with details of life-forms present.
8. Recording the presence/absence and type of any Scottish MPA project search feature and any Annex 1 reef habitat subtypes.
9. Recording the presence of any visible impacts or other modifiers, including trawl marks, discarded fishing gear, visible physical damage, evidence of strong currents.

Third non-stop view of the video clip included:

10. Reviewing all data to ensure sediment composition, species abundance and habitat description all make sense when viewed as a whole.
11. Assign biotope(s) to the habitat as described in section 2.3.

2.3 Habitat type and biotope assignment

Biotores (EUNIS level 5 or higher) or biotope complexes (EUNIS level 4) were assigned to stills and video clips using information from the Marine Habitat Classification for Britain & Ireland v04.05 (Url2), associated JNCC physical and biological comparative tables (Url3), and JNCC guidance relating to definitions of a biotope (Url4).

Areas with two or more biotores mixed together, interspersed or regularly repeating, such as with waves of coarse and then fine sediments, were defined as being a mosaic of all contributing habitats/biotores.

When describing a habitat, if no biotope within the Marine Habitat Classification fit, the best fit was recorded and notes made as to why the fit was poor. In cases where the same or similar habitat was identified from different areas, and therefore could be clearly distinguished from existing biotores, a new biotope was proposed to the JNCC, or changes to existing biotores were proposed that would improve the fit of the scrutinised habitat. Summaries of new proposed biotores are provided in Appendix 3.

Scottish MPA project search features (detailed in Appendix 2) were assigned to stills and video samples during analysis.

2.4 Delineation of Annex I reef sub-types

Annex 1 reef habitat subtypes were assigned to stills and video clips using information and definitions from CEC (2007), Blythe-Skyrme *et al* (2008) and Irving (2009). Reef habitat included hard compact substrata comprising biogenic concretions (biogenic reef) or substrata of geogenic origin comprising bedrock (bedrock reef) or boulders and cobbles (stony reef). To be assigned as Annex 1 reef habitat, the hard substrata had to be topographically distinct from the surrounding solid or soft seafloor, and had to be greater in area than 25m² (an area of 5m x 5m). To be assigned as stony reef, an area required greater than 10% (more typically 40%) cover of boulders and cobbles, and the majority of any fauna present had to be dependant upon the hard substrata rather than any sediment elements of the seafloor.

2.5 Video and stills analysis Quality Assurance

At the beginning of the data analysis stage of the project, all surveyors worked together for the first video and stills samples to ensure recording was consistent and any difficulties in species or substrate identification were highlighted and rectified. During this initial group-scoring, a set of rules was created to overcome differences in interpretation between surveyors and therefore ensure the highest levels of recording consistency was maintained between different surveyors.

To ensure species and habitat identification was consistent between surveyors, all surveyors saved screen grabs of taxa from stills and video, and organised these by phyla. Screen grabs were taken of both identifiable taxa and also taxa that presented ID difficulties either due to image clarity or actual ID uncertainty. At an appropriate point during the analysis stage, the surveyors spent several days as a group reviewing the ID uncertainty images, agreeing how to deal with each query, and agreeing the appropriate taxonomic level that such query taxa should be recorded to.

After the analysis stage for each survey area was complete, a minimum of 10% of video clips and stills were re-analysed by a different surveyor to ensure inter-surveyor variability was reduced to a minimum. If after re-analysis, the Quality Assurance (QA) highlighted significant (levels of magnitude of difference) inter-worker variability, the two surveyors worked together to determine where discrepancies occurred and formulated specific rules to overcome such differences for future analysis. If significant differences were identified between surveyors, an additional 10% of imagery was subject to further QA using the same process.

As with the initial imagery analysis, Excel spreadsheets were used to audit which data was re-analysed for QA purposes and who undertook the re-analysis. Recorded within the audit spreadsheets was the date of QA, the name of the QA surveyor, QA re-analysis results, comments relating to differences in results between surveyors and any remedial actions undertaken.

2.6 Marine Recorder v4 Data entry

During methods discussions, prior to analysis, a recording proforma was prepared (Appendix 1) to record all Marine Recorder v4 (MR) 'required' information, all relevant MR 'optional' fields and also several additional non-MR fields required for the GIS. Fields within the proforma were arranged in the same order as data is entered into MR therefore ensuring data entry was as quick and straightforward as possible.

Data from each distinct survey was entered into MR corresponding to a separate MR survey, each with a separate MR location. Survey and location boxes were drawn up in the GIS prior to data entry. Each video tow represented a MR event and each video clip demonstrating an individual habitat (aimed at EUNIS level 3 or higher) corresponded to a MR sample. Additionally each photograph also corresponded to a MR sample.

2.6.1 Marine Recorder data entry QA

When preparing Excel data entry spreadsheets for import into GIS and entry into Marine Recorder v4 (MR), a thorough process of data cleaning was undertaken to ensure the quality of data within these formats. Data cleaning included using: the 'Spell Checker' to ensure typos were removed; the 'Find and Replace' function to remove any unwanted spaces or other characters; and Excel 'text string' and 'value' functions & calculations to validate data types within text and value specific fields.

Upon completion of MR data entry, a minimum of 10% of MR samples were compared with original format recording sheets (paper for video and excel spreadsheets for stills). Where any differences between original and final formats were identified, remedial action was taken to ensure data quality. If frequent and consistent errors were identified, the data was explored to identify any data entry or data import systematic errors. Excel spreadsheets were used to audit which samples were checked and any remedial actions undertaken.

3 Results

The following section describes results from the analysis of video and stills from three Scottish offshore surveys undertaken in 2011:

1. 2011 MSS IBTSQ3 survey (IBTSQ3)
2. 2011 1111s FRV Scotia Rona-Windsock survey (Windsock)
3. 2011 MSS Rockall survey (Rockall)

3.1 2011 MSS IBTSQ3 survey

Imagery from the 2011 MSS IBTSQ3 survey (IBTSQ3) included towed video from 38 tows, totalling 17 hours and 46 minutes of footage and 950 stills. After an initial review, all 38 video tows and 904 stills were considered usable for identification of taxa and/or habitats. Three of the tows were determined to contain multiple habitats and consequently were split to ensure each clip represented a single EUNIS level 3 habitat or samples in terms of Marine Recorder v4 data entry. A fourth video clip (station 12.1) was also split due to poor quality of 60% of the video sample. The resulting clip (20110810_Stn12.1V2) was analysed separately from the entire video sample. Splitting the tows resulted in a total of 44 video clips, each representing a single video sample (except station 12.1).

The Location Box for the IBTSQ3 Scottish waters (Figures 1), entered into Marine Recorder included the area from Latitude 60 39.338, Longitude 0 20.390 (North East Corner) to Latitude 55 52.37, Longitude -3 48.743 (South West Corner). The Location Box for the IBTSQ3 English waters (Figures 2), entered into Marine Recorder included the area from Latitude 56 46.623, Longitude 2 35.307 (North East Corner) to Latitude 54 18.857, Longitude -0 45.998 (South West Corner). For positional quality control purposes it is important to note that the IBTSQ3 survey area spanned zero degrees longitude and therefore samples included a mixture of east and west longitudes.

The locations of analysed video samples undertaken in waters adjacent to Scotland are shown in Figure 1, and analysed samples undertaken in waters adjacent to England are shown in Figure 2.

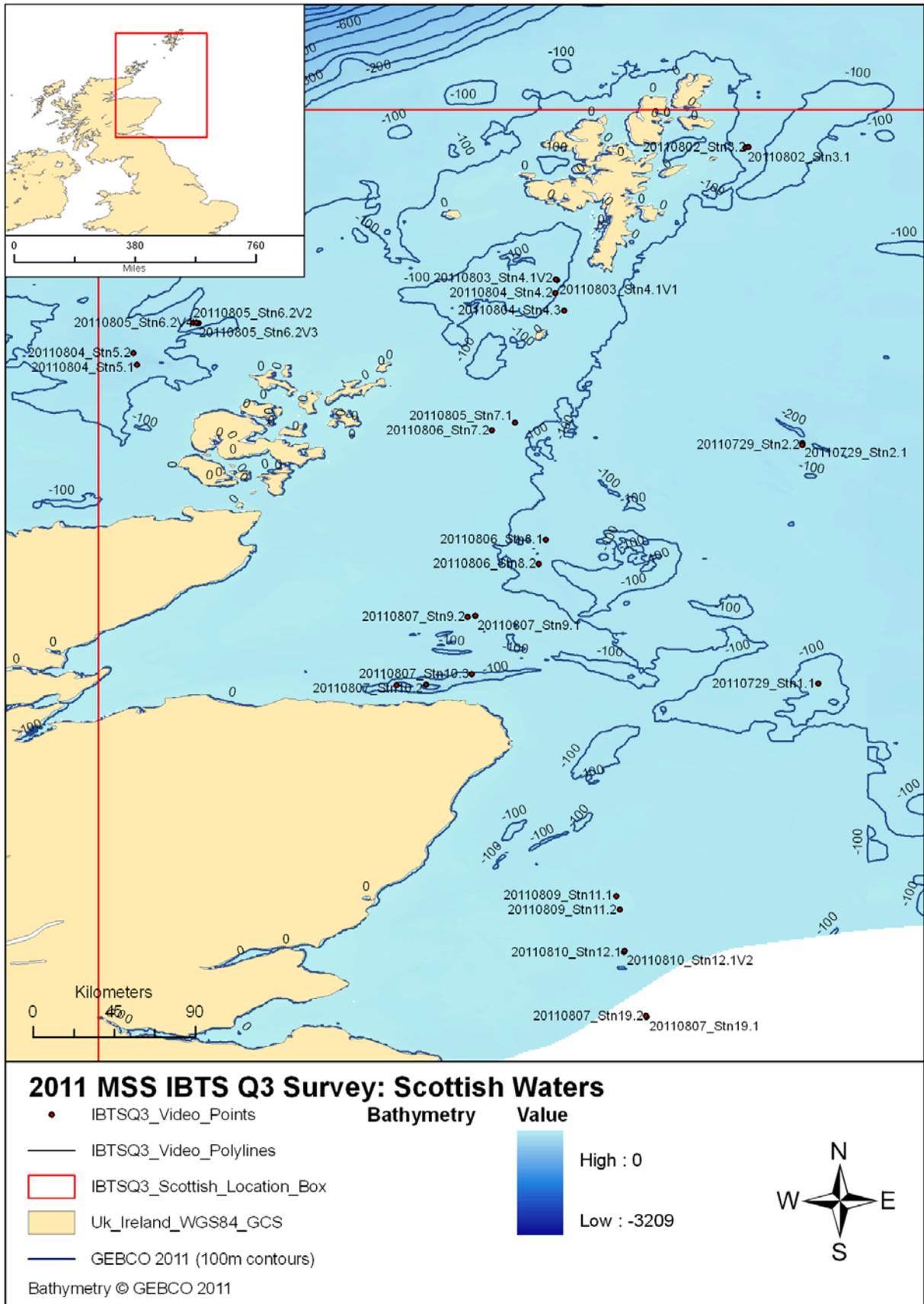


Figure 1. Map showing the location of the IBTSQ3 survey area off Scotland (IBTSQ3 Scottish Location Box), individual video samples (IBTSQ3 Video Polylines) and video sample centre points (IBTSQ3 Video Points). Photo samples (IBTSQ3 Stills Points), taken at approximately minute intervals, were analysed from all stations however are not visible at the current map scale.

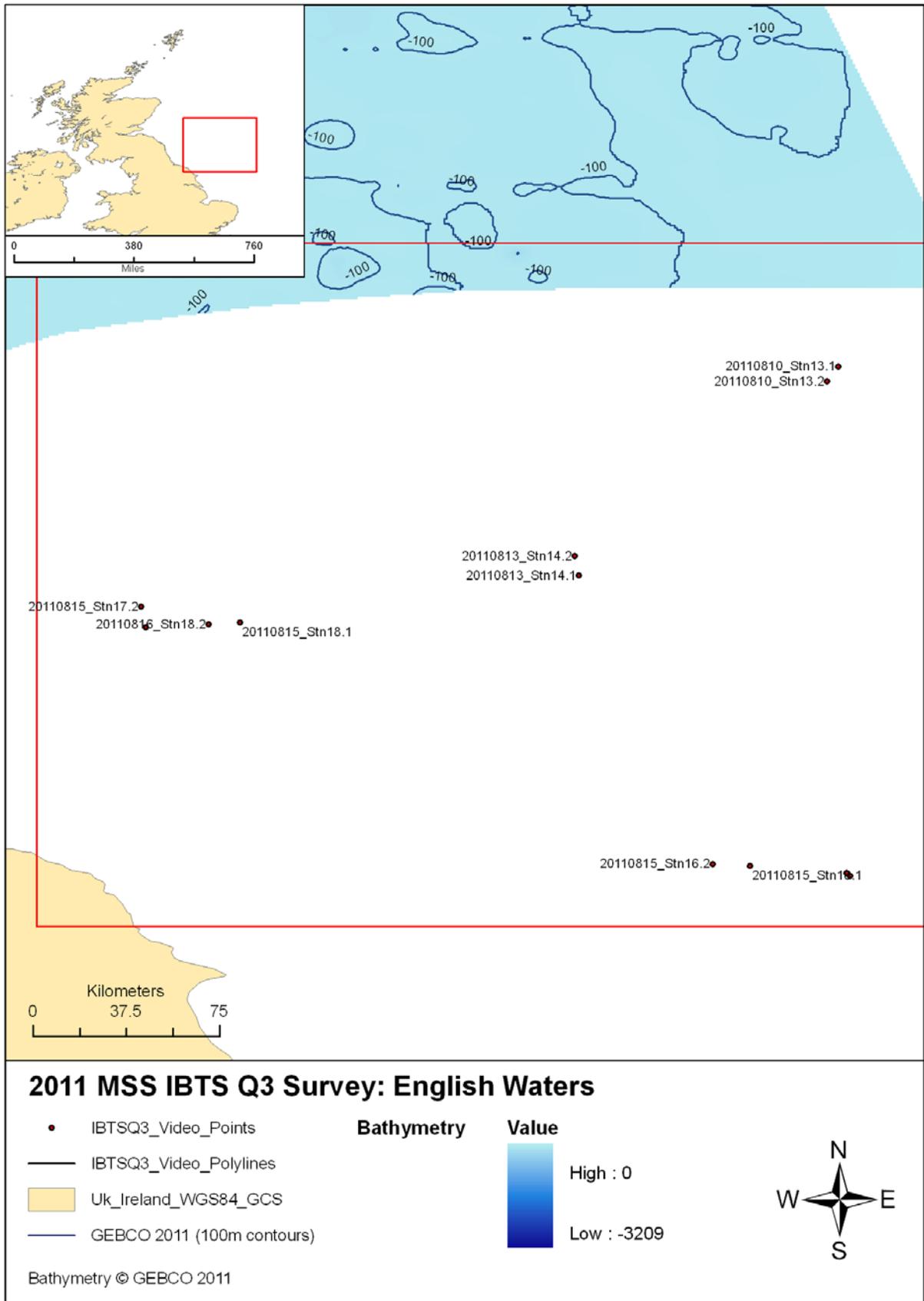


Figure 2. Map showing the location of the IBTSQ3 survey area off England (IBTSQ3 English Location Box), individual video samples (IBTSQ3 Video Polylines) and video sample centre points (IBTSQ3 Video Points). Photo samples (IBTSQ3 Stills Points), taken at approximately minute intervals, were analysed from all stations however are not visible at the current map scale.

3.1.1 Description of habitat types present

IBTSQ3 video samples mainly comprised offshore circalittoral mud, circalittoral muddy sands, circalittoral sandy mud and offshore coarse sediments.

Biotopes assigned to IBTSQ3 habitats included the offshore sediment and circalittoral sediment biotopes: SS.SMu.OMu, SS.SCS.OCS, SS.SSa.OSa, SS.SMu.CSaMu, SS.SMx.OMx and SS.SSa.CMuSa. Table 1 shows the biotopes and mosaics assigned to entire video sample, whilst Table 2 itemises each biotope and the number of still images and video habitats assigned. Table 3 provides habitat descriptions together with biotopes assigned to each video sample (or each different habitat of the tow).

Table 1. MNCR biotope codes and names assigned to IBTSQ3 video samples and the number of video samples that each biotope was assigned to.

Biotope code	Biotope name	No of video samples present
CR.MCR.EcCr.FaAlCr.Bri(no algae)	Proposed biotope within CR.MCR.EcCr	3
Mosaic of SS.SCS.OCS & SS.SMx.CMx.FluHyd(sparse)	Mosaic of Offshore circalittoral coarse sediment & Proposed change to SS.SMx.CMx.FluHyd	1
Mosaic of SS.SMu.OMu & SS.SMu.CFiMu.SpMmeg	Mosaic of Offshore circalittoral mud & Seapens and burrowing megafauna in circalittoral fine mud	3
SS.SCS.OCS	Offshore circalittoral coarse sediment	7
SS.SMu.CSaMu	Circalittoral sandy mud	5
SS.SMu.OMu	Offshore circalittoral mud	9
SS.SMx.OMx	Offshore circalittoral mixed sediments	5
SS.SSa.CMuSa	Circalittoral muddy sand	4
SS.SSa.OSa	Offshore circalittoral sand	7

Table 2. Occurrence of biotopes within IBTSQ3 video and stills samples (includes biotopes described within mosaics).

Biotope Code	Biotope Name	Number of Video Samples with Biotope	Number of Stills Samples with Biotope
CR.MCR.EcCr.FaAlCr.Bri(no algae)	Proposed biotope within CR.MCR.EcCr	3	15
SS.SCS.OCS	Offshore circalittoral coarse sediment	8	108
SS.SMu.CFiMu.SpMmeg	Seapens and burrowing megafauna in circalittoral fine mud	3	22
SS.SMu.CSaMu	Circalittoral sandy mud	5	106
SS.SMu.OMu	Offshore circalittoral mud	11	286
SS.SMx.CMX.FluHyd(sparse)	Sparse <i>Flustra foliacea</i> and <i>Hydrallmania falcata</i> on tide-swept circalittoral mixed sediment	1	0
SS.SMx.OMx	Offshore circalittoral mixed sediments	5	124
SS.SSa.CMuSa	Circalittoral muddy sand	4	89
SS.SSa.OSa	Offshore circalittoral sand	7	176

Two biotopes assigned to IBTSQ3 video and stills samples did not fit well within the Marine Habitat Classification and consequently the following changes to existing biotopes or new epifaunal biotopes are proposed to improve the biotope fit for offshore habitats (epifauna only):

Biotope Code	Closest Biotope
CR.MCR.EcCr.FaAlCr.Bri(no algae)	Most similar to Brittlestars on faunal and algal encrusted exposed to moderately wave-exposed circalittoral rock. However, lacking algal crusts and found in deeper water than this biotope has been previously recorded.
SS.SMx.CMX.FluHyd(sparse)	Most similar to <i>Flustra foliacea</i> and <i>Hydrallmania falcata</i> on tide-swept circalittoral mixed sediment, but sparse/impoverished. However, found in deeper water than this biotope has been previously recorded.

Details and example images of the proposed biotopes are provided in Appendix 3.

Table 3. Habitat descriptions and biotope codes for IBTSQ3 video samples.

Station / Tow	Video Sample	Habitat Description	Biotope Name	EUNIS Level	Biotope Code
IBTSQ3 Stn1.1	20110729_Stn1.1	Offshore circalittoral mud and muddy sand SS.SMu.OMu. Many pock marks and mounds, possibly indicating burrowing mega fauna.	Offshore circalittoral mud	4	SS.SMu.OMu
IBTSQ3 Stn2.1	20110729_Stn2.1	Offshore circalittoral mud. SS.SMu.OMu. Mud with holes and burrows. Sea pens (<i>Pennatula</i> and <i>Virgularia</i>).	Mosaic of Offshore circalittoral mud & Seapens and burrowing mega fauna in circalittoral fine mud	4 & 5	Mosaic of SS.SMu.OMu & SS.SMu.CFiMu.Sp nMeg
IBTSQ3 Stn2.2	20110729_Stn2.2	Offshore circalittoral mud SS.SMu.OMu with vertical burrows, <i>Nephrops</i> burrows, <i>Virgularia</i> and <i>Pennatula</i> sea pens.	Mosaic of Offshore circalittoral mud & Seapens and burrowing mega fauna in circalittoral fine mud	4 & 5	Mosaic of SS.SMu.OMu & SS.SMu.CFiMu.Sp nMeg
IBTSQ3 Stn3.1	20110802_Stn3.1	Sandy muddy bottom with <i>Pennatula</i> and Paguridae. Two <i>Lophius</i> sp. Circalittoral sandy mud. SS.SMu.CSaMu.	Circalittoral sandy mud	4	SS.SMu.CSaMu
IBTSQ3 Stn3.2	20110802_Stn3.2	Circalittoral sandy mud. SS.SMu.CSaMu Bioturbated. Video quality not too good, video fast and often blurred.	Circalittoral sandy mud	4	SS.SMu.CSaMu
IBTSQ3 Stn4.1	20110803_Stn4.1V1	Offshore circalittoral coarse sediment. SS.SCS.OCS. Sediment waves, alternating coarse sediment of stone pebbles and dead shell/fine to medium silty sand. Compacted pebbles with dead shell alternates with coarse sand.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
IBTSQ3 Stn4.1	20110803_Stn4.1V2	Cobbles, boulders, bedrock and coarse sand. Epifaunal turf. Offshore circalittoral coarse sediment. SS.SCS.OCS.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
IBTSQ3 Stn4.2	20110804_Stn4.2	Shell gravel and boulders. Circalittoral coarse sediment SS.SCS.OCS Hydroid/bryozoan turf, some urchins and opiuroids.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
IBTSQ3 Stn4.3	20110804_Stn4.3	Mosaic of offshore circalittoral coarse sediments in waves: sand & shell (SS.SCS.OCS) covering boulder (and possibly bedrock) reef with mixed faunal turf (SS.SMx.CMx.FluHyd(sparse)).	Mosaic of Offshore circalittoral coarse sediment & Proposed change to SS.SMx.CMx.FluHyd	4	Mosaic of SS.SCS.OCS & SS.SMx.CMx.FluHyd(sparse)
IBTSQ3 Stn5.1	20110804_Stn5.1	Mud with many holes and burrows a few <i>Nephrops</i> . Offshore circalittoral mud. Offshore circalittoral mud. SS.SMu.OMu.	Offshore circalittoral mud	4	SS.SMu.OMu
IBTSQ3 Stn5.2	20110804_Stn5.2	Offshore circalittoral mud and muddy sand SS.SMu.OMu. Muddy sediment with burrow, holes and tubes, possibly <i>Ampharete falcata</i> . Sea pens. Offshore circalittoral mud. SS.SMu.OMu.	Offshore circalittoral mud	4	SS.SMu.OMu
IBTSQ3	20110805	Scoured bedrock with intermittent cover of mobile coarse	Proposed biotope within	5	CR.MCR.EcCr.Fa

Station / Tow	Video Sample	Habitat Description	Biotope Name	EUNIS Level	Biotope Code
Stn6.1	_Stn6.1V 1	sediment. CR.MCR.EcCr.FaAlCr.Bri(no algae) <i>Ophiothrix</i> and <i>Ophiocomina</i> , <i>Thuiaria</i> .	CR.MCR.EcCr		AlCr.Bri(no algae)
IBTSQ3 Stn6.1	20110805 _Stn6.1V 2	Sediment waves sequence of coarse sand with bands of dead shell and pebbles - Circalittoral coarse sediment with limited fauna.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
IBTSQ3 Stn6.2	20110805 _Stn6.2V 1	1) Scoured bedrock and boulders with intermittent cover of mobile coarse sediment. CR.MCR.EcCr.FaAlCr.Bri(no algae) <i>Ophiothrix</i> and <i>Ophiocomina</i> , <i>Thuiaria</i> .	Proposed biotope within CR.MCR.EcCr	5	CR.MCR.EcCr.FaAlCr.Bri(no algae)
IBTSQ3 Stn6.2	20110805 _Stn6.2V 2	(2) Scoured bedrock/boulders and coarse sediment waves with <i>Flustra/Securiflustra</i> .	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
IBTSQ3 Stn6.2	20110805 _Stn6.2V 3	1) Scoured bedrock and boulders with intermittent cover of mobile coarse sediment. CR.MCR.EcCr.FaAlCr.Bri(no algae) <i>Ophiothrix</i> and <i>Ophiocomina</i> , <i>Thuiaria</i> .	Proposed biotope within CR.MCR.EcCr	5	CR.MCR.EcCr.FaAlCr.Bri(no algae)
IBTSQ3 Stn6.2	20110805 _Stn6.2V 4	(3) Circalittoral coarse sediment waves sequence of coarse sand and bands of dead shell and pebbles.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
IBTSQ3 Stn7.1	20110805 _Stn7.1	Species difficult to determine due to speed of video. Offshore circalittoral mixed sediment SS.SMx.OMx. Possible <i>Epizoanthus</i> .	Offshore circalittoral sand	4	SS.SMx.OMx
IBTSQ3 Stn7.2	20110806 _Stn7.2	Coarse sediment, ripples and broken shells, few rocks with <i>Flustra</i> and <i>Alcyonium</i> . Hard to determine species offshore circalittoral coarse sediment. SS.SCS.OCS.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
IBTSQ3 Stn8.1	20110806 _Stn8.1	Offshore circalittoral mud with <i>Pennatula</i> and <i>Virgularia</i> , burrowing mega fauna including <i>Nephrops</i> . Offshore circalittoral mud. SS.SMu.OMu.	Offshore circalittoral mud	4	SS.SMu.OMu
IBTSQ3 Stn8.2	20110806 _Stn8.2	Offshore, circalittoral mud with <i>Pennatula</i> and <i>Virgularia</i> , burrowing mega fauna including <i>Nephrops</i> . Offshore circalittoral mud. SS.SMu.OMu.	Offshore circalittoral mud	4	SS.SMu.OMu
IBTSQ3 Stn9.1	20110807 _Stn9.1	Species hard to determine due to video being fast. Offshore circalittoral mixed sediment. SS.SMx.OMx.	Offshore circalittoral sand	4	SS.SMx.OMx
IBTSQ3 Stn9.2	20110807 _Stn9.2	Too fast for accurate species ID. Rippled sand, occasional rock with hydroids. Offshore circalittoral mixed sediment. SS.SMx.OMx.	Offshore circalittoral sand	4	SS.SMx.OMx
IBTSQ3 Stn10.1	20110807 _Stn10.1	Offshore circalittoral mud. Video quality poor due to speed, lifting off the sea bed and the weight causing sediment in water. Burrows and holes. Offshore circalittoral mud. SS.SMu.OMu.	Offshore circalittoral mud	4	SS.SMu.OMu

Station / Tow	Video Sample	Habitat Description	Biotope Name	EUNIS Level	Biotope Code
IBTSQ3 Stn10.2	20110807 _Stn10.2	Muddy sand/shell with small boulders/cobbles and some epifauna. Not good quality although slow.	Circalittoral sandy mud	4	SS.SMu.CSaMu
IBTSQ3 Stn10.3	20110807 _Stn10.3	Mud, a few <i>Pennatula phosphorea</i> and <i>Nephrops</i> . Bioturbated with holes and burrows, tubes, mounds. Lots of sediment disturbance, resolution poor for much of the video. Offshore circalittoral mud. SS.SMu.OMu.	Offshore circalittoral mud	4	SS.SMu.OMu
IBTSQ3 Stn11.1	20110809 _Stn11.1	Sandy ripples, small rocks or cobbles with epifauna, possibly <i>Alcyonium digitatum</i> , one possibly with <i>Metridium</i> . Too bouncy for accurate identification. <i>Flustra</i> appears free on surface and small flatfish (Juv). Offshore circalittoral sand. SS.SSa.OSa	Offshore circalittoral sand	4	SS.SSa.OSa
IBTSQ3 Stn11.2	20110809 _Stn11.2	Bouncing, often some distance off the sediment. Sand ripples with shell, some <i>Flustra</i> not obviously attached. Possible white sponge. Offshore circalittoral sand. Offshore circalittoral sand. SS.SSa.OSa	Offshore circalittoral sand	4	SS.SSa.OSa
IBTSQ3 Stn12.1	20110810 _Stn12.1	Rippled muddy sand. <i>Flustra</i> present. Not sure how much if any is attached. Bouncy video means little is identifiable and much is missed. Circalittoral sands and muddy sands. SS.SSa.OSa.	Offshore circalittoral sand	4	SS.SSa.OSa
IBTSQ3 Stn12.1	20110810 _Stn12.1 V2	Rippled muddy sand. <i>Flustra</i> present, possibly not attached. Video bouncy, sediment stirred up. Circalittoral sands and muddy sand.	Offshore circalittoral sand	4	SS.SSa.OSa
IBTSQ3 Stn13.1	20110810 _Stn13.1	Circalittoral sandy mud, with burrows. SS.SMu.CSaMu. Sea pens.	Circalittoral sandy mud	4	SS.SMu.CSaMu
IBTSQ3 Stn13.2	20110810 _Stn13.2	Muddy sand with dead shells, some like <i>Modiolus</i> . <i>Virgularia</i> . Hard to determine species due to bouncing and speed. Circalittoral sandy mud. SS.SMu.CSaMu.	Circalittoral sandy mud	4	SS.SMu.CSaMu
IBTSQ3 Stn14.1	20110813 _Stn14.1	Sandy mud with sea pens. Bioturbated. Hard to distinguish species. Offshore circalittoral mud. SS.SMu.OMu.	Offshore circalittoral mud	4	SS.SMu.OMu
IBTSQ3 Stn14.2	20110813 _Stn14.2	Offshore circalittoral sandy mud. SS.SMu.OMu. <i>Pennatula phosphorea</i> frequent, bioturbated mud with many holes and burrows, hard to determine species.	Offshore circalittoral mud	4	SS.SMu.OMu
IBTSQ3 Stn15.1	20110814 _Stn15.1	Circalittoral muddy sand, with shells in waves. SS.SSa.CMuSa Little obvious life on rippled sand, a few starfish (<i>Asterias</i>) and a crab.	Circalittoral muddy sand	4	SS.SSa.CMuSa
IBTSQ3 Stn15.2	20110814 _Stn15.2	Circalittoral muddy sand with some shell fragments. SS.SSa.CMuSa Not a lot of visible life, a few flat fish, crabs and starfish. One shoal of fish at the end of the video. Fast, hard to	Circalittoral muddy sand	4	SS.SSa.CMuSa

Station / Tow	Video Sample	Habitat Description	Biotope Name	EUNIS Level	Biotope Code
		determine species.			
IBTSQ3 Stn16.1	20110815 _Stn16.1	Circalittoral muddy sand. SS.SSa.CMuSa. Ripples with shell gravel and empty shells, video fast over bottom, hard to determine species. Mostly flatfish, (No Suggestions) and <i>Brachyura</i> seen.	Circalittoral muddy sand	4	SS.SSa.CMuSa
IBTSQ3 Stn16.2	20110815 _Stn16.2	Circalittoral muddy sand. SS.SSa.CMuSa.	Circalittoral muddy sand	4	SS.SSa.CMuSa
IBTSQ3 Stn17.1	20110815 _Stn17.1	Offshore circalittoral mixed sediment. SS.SMx.OMx Sand ripples, some broken shell, occasional rock. Too fast for accurate species ID or too blurred. Possible <i>Modiolus</i> .	Offshore circalittoral sand	4	SS.SMx.OMx
IBTSQ3 Stn17.2	20110815 _Stn17.2	Offshore circalittoral mixed sediment. SS.SMx.OMx Rippled muddy sand with shell fragments. Few species visible, blurred.	Offshore circalittoral sand	4	SS.SMx.OMx
IBTSQ3 Stn18.1	20110815 _Stn18.1	Offshore circalittoral mud with sea pens. Video often too blurred to determine species accurately. Bioturbated muddy sand with burrows holes and tubes, possibly a few <i>Ampharete</i> and <i>Epizoanthus</i> . Mostly <i>Pagurus</i> and <i>Pennatula</i> sea pens, abundant.	Mosaic of Offshore circalittoral mud & Seapens and burrowing megafauna in circalittoral fine mud	4 & 5	Mosaic of SS.SMu.OMu & SS.SMu.CFiMu.Sp nMeg
IBTSQ3 Stn18.2	20110816 _Stn18.2	Offshore circalittoral sand. SS.SSa.OSa Shells, occasional cobble with bryozoan/hydroid turf. Few <i>Pennatula</i> and <i>Pagurus</i> . Hard to determine species due to video off ground and therefore blurred.	Offshore circalittoral sand	4	SS.SSa.OSa
IBTSQ3 Stn19.1	20110807 _Stn19.1	Offshore circalittoral sand. SS.SSa.OSa Offshore circalittoral muddy rippled sand with occasional <i>Alcdig</i> and broken shell towards the end. One habitat present. Few species visible on rippled sand.	Offshore circalittoral sand	4	SS.SSa.OSa
IBTSQ3 Stn19.2	20110807 _Stn19.2	Offshore circalittoral slightly rippled muddy course sand with <i>Alcdig</i> and <i>Secflus</i> and larger fragments of broken shell and pebbles. One habitat present.	Offshore circalittoral sand	4	SS.SSa.OSa

3.1.2 Description of MPA search features present

The following MPA search features were identified from video and stills:

Offshore deep sea muds

Station	Sample	Method	Lat	Long
IBTSQ3 Halibut Bank Station 1.1	20110729_Stn1.1	Towed Video	57.780333	-0.238550
IBTSQ3 Fladen Deep Station 2.1	20110729_Stn2.1	Towed Video	58.991317	-0.314150
IBTSQ3 Fladen Deep Station 2.2	20110729_Stn2.2	Towed Video	58.982400	-0.314417
IBTSQ3 NE Orkney Station 5.1	20110804_Stn5.1	Towed Video	59.382394	-3.635573
IBTSQ3 NE Orkney Station 5.2	20110804_Stn5.2	Towed Video	59.441400	-3.656000
IBTSQ3 Fladen Tunnel Valley Stn 8.1	20110806_Stn8.1	Towed Video	58.501750	-1.600150
IBTSQ3 Fladen Tunnel Valley Stn 8.2	20110806_Stn8.2	Towed Video	58.382817	-1.637300

Offshore subtidal sands and gravels

Station	Sample	Method	Lat	Long
IBTSQ3 Papa Bank High Station 6.1	20110805_Stn6.1 V2	Towed Video	59.595788	-3.356226
IBTSQ3 Papa Bank High Station 6.2	20110805_Stn6.2 V4	Towed Video	59.59306	-3.339625
IBTSQ3 Orkney E Approaches Station 7.1	20110805_Stn7.1	Towed Video	59.090934	-1.748135
IBTSQ3 Orkney E Approaches Station 7.2	20110806_Stn7.2	Towed Video	59.052666	-1.864287
IBTSQ3 Outer Moray Firth Station 9.1	20110807_Stn9.1	Towed Video	58.120813	-1.946881
IBTSQ3 Outer Moray Firth Station 9.2	20110807_Stn9.2	Towed Video	58.115913	-1.985646
IBTSQ3 LDMN East Montrose Station 11.1	20110809_Stn11.1	Towed Video	56.714645	-1.244388
IBTSQ3 LDMN East Montrose Station 11.2	20110809_Stn11.2	Towed Video	56.645637	-1.224711
IBTSQ3 LDMN East Montrose Station 12.1	20110810_Stn12.1	Towed Video	56.433364	-1.205881
IBTSQ3 LDMN East Montrose Station 12.1	20110810_Stn12.1 V2	Towed Video	56.438897	-1.202239

Seapens and burrowing megafauna in circalittoral fine mud (Burrowed mud)

Station	Sample	Method	Lat	Long
IBTSQ3 Fladen Deep Station 2.1	20110729_Stn2.1	Towed Video	58.991317	-0.314150
IBTSQ3 Fladen Deep Station 2.1	Stn2.1_112_1246	Still image	58.991080	-0.314310
IBTSQ3 Fladen Deep Station 2.1	Stn2.1_112_1252	Still image	58.989530	-0.314980
IBTSQ3 Fladen Deep Station 2.1	Stn2.1_112_1253	Still image	58.989378	-0.315057
IBTSQ3 Fladen Deep Station 2.1	Stn2.1_112_1257	Still image	58.988845	-0.315497
IBTSQ3 Fladen Deep Station 2.1	Stn2.1_112_1258	Still image	58.988682	-0.315690
IBTSQ3 Fladen Deep Station 2.1	Stn2.1_112_1260	Still image	58.988205	-0.316077
IBTSQ3 Fladen Deep Station 2.1	Stn2.1_112_1262	Still image	58.987395	-0.316477
IBTSQ3 Fladen Deep Station 2.1	Stn2.1_112_1265	Still image	58.986627	-0.316733
IBTSQ3 Fladen Deep Station 2.1	Stn2.1_112_1268	Still image	58.985982	-0.317087
IBTSQ3 Fladen Deep Station 2.2	20110729_Stn2.2	Towed Video	58.982400	-0.314417
IBTSQ3 Fladen Deep Station 2.2	Stn2.2_112_1274	Still image	58.981893	-0.314545
IBTSQ3 Fladen Deep Station 2.2	Stn2.2_112_1275	Still image	58.98164	-0.314585
IBTSQ3 Fladen Deep Station 2.2	Stn2.2_112_1277	Still image	58.98115	-0.31467
IBTSQ3 Fladen Deep Station 2.2	Stn2.2_112_1279	Still image	58.980547	-0.314687

IBTSQ3 Fladen Deeps Station 2.2	Stn2.2_112_1281	Still image	58.979863	-0.31464
IBTSQ3 Fladen Deeps Station 2.2	Stn2.2_112_1283	Still image	58.979193	-0.314627
IBTSQ3 Fladen Deeps Station 2.2	Stn2.2_112_1284	Still image	58.978992	-0.314648
IBTSQ3 Fladen Deeps Station 2.2	Stn2.2_112_1285	Still image	58.978705	-0.314627
IBTSQ3 Fladen Deeps Station 2.2	Stn2.2_112_1286	Still image	58.978375	-0.31466
IBTSQ3 Fladen Deeps Station 2.2	Stn2.2_112_1288	Still image	58.977955	-0.314655
IBTSQ3 Fladen Deeps Station 2.2	Stn2.2_112_1289	Still image	58.977893	-0.31465
IBTSQ3 Fladen Deeps Station 2.2	Stn2.2_112_1290	Still image	58.97772	-0.314635

Unspecified burrowed mud, consisting of bioturbated mud with holes, mounds, pits and occasional burrows but with no obvious fauna, was also recorded in the remaining 18 stills from the IBTSQ3 Fladen Deeps Station 2.1 and 5 from Station 2.2.

Presence of seapens and burrows was also recorded at the following stations, indicative of the seapens and burrowing megafauna component of the Burrowed mud search feature.

Station	Sample	Method	Lat	Long
IBTSQ3 East Shetland Station 3.1	20110802_Stn3.1	Towed Video	60.473683	-0.595400
IBTSQ3 East Shetland Station 3.2	20110802_Stn3.2	Towed Video	60.476500	-0.577867
IBTSQ3 NE Orkney Station 5.2	20110804_Stn5.2	Towed Video	59.441400	-3.656000
IBTSQ3 Fladen - Tunnel Valley Station 8.1	20110806_Stn8.1	Towed Video	58.501750	-1.600150
IBTSQ3 Fladen - Tunnel Valley Station 8.2	20110806_Stn8.2	Towed Video	58.382817	-1.637300
IBTSQ3 Southern Trench Station 10.3	20110807_Stn10.3	Towed Video	57.826600	-1.963517

Additionally seapens and burrows were recorded in 98 stills from the following stations: Stn3.1, Stn3.2, Stn5.2, Stn8.1, Stn8.2, Stn13.1, Stn13.2, Stn14.1, Stn14.2, Stn18.1 & Stn18.2

An individual possible *Arctica islandica* was identified from 1 photo within the video sample 20110729_Stn2.1 (station IBTSQ3 Fladen Deeps Station 2.1).

Individual *Modiolus modiolus* shells (non reef-forming) were identified from 12 stills from the following stations: Stn4.3, Stn13.2 and Stn17.1

3.1.3 Description of Annex 1 reef features present

Annex 1 Geogenic (bedrock) reef

The Annex 1 geogenic (bedrock) reef habitat subtype was recorded at the following stations:

Station	Sample	Lat	Long
IBTSQ3 Papa Bank High Station 6.1	20110805_Stn6.1V1	59.594117	-3.354217
IBTSQ3 Papa Bank High Station 6.2	20110805_Stn6.2V1	59.589967	-3.325983
IBTSQ3 Papa Bank High Station 6.2	20110805_Stn6.2V2	59.591100	-3.331633
IBTSQ3 Papa Bank High Station 6.2	20110805_Stn6.2V3	59.592233	-3.335767

Additionally Annex 1 geogenic (bedrock) reef habitat was recorded in 17 stills from the following stations: 20110803_Stn4.1V2, 20110804_Stn4.3, 20110805_Stn6.2V1, 20110805_Stn6.2V2 & 20110805_Stn6.2V3.

Annex 1 Stony reef

The Annex 1 stony reef habitat subtype was recorded at the following stations:

Station	Sample	Lat	Long
IBTSQ3 Sumburgh Station 4.1	20110803_Stn4.1V2	59.808817	-1.542850
IBTSQ3 Sumburgh Station 4.3	20110804_Stn4.3	59.650567	-1.500350

Additionally Annex 1 stony reef habitat was recorded in 19 images from the following stations: 20110803_Stn4.1V1, 20110804_Stn4.2, 20110804_Stn4.3, 20110805_Stn6.2V1 and 20110805_Stn6.2V2.

3.1.4 Species of conservation interest in the IBTSQ3 survey area

The following species of conservation interest were recorded during the analysis of the IBTSQ3 imagery:

Species	Conservation Interest
<i>Raja radiata</i>	IUCN (2001) Vulnerable
<i>Arctica islandica</i>	OSPAR Convention
<i>Halcampoides elongates</i>	Scottish Biodiversity List, Nationally scarce marine species
Octocorallia	Scottish Biodiversity List
<i>Modiolus Modiolus</i>	Priority Species (Northern Ireland)
<i>Pleuronectes platessa</i>	Scottish Biodiversity List, UK Biodiversity Action Plan priority species
<i>Merlangius merlangus</i>	Scottish Biodiversity List, UK Biodiversity Action Plan priority species
<i>Scomber scombrus</i> ,	UK Biodiversity Action Plan priority species
<i>Funiculina quadrangularis</i>	UK Biodiversity Action Plan priority species
Ammodytidae	Scottish Biodiversity List, UK Biodiversity Action Plan priority species

3.2 2011 1111s FRV Scotia Rona-Windsock survey

Imagery from the 2011 1111s FRV Scotia Rona-Windsock survey (Windsock) included video from 50 tows, totalling 15 hours and 37 minutes of footage and 1472 stills. After an initial review of the supplied data, 49 video tows were found to be present and suitable for identification of taxa and/or habitats. Additionally 1382 stills were considered usable for identification of taxa and/or habitats. Three of the tows were determined to contain multiple habitats and consequently were split into clips representing a single EUNIS level 3 habitat, or samples in terms of Marine Recorder v4 data entry. Splitting the tows resulted in a total of 52 video clips, each representing a single video sample.

3.2.1 Rona-Windsock survey: Block A

Block A of the 2011 1111s FRV Scotia Rona-Windsock survey (Windsock A) included 34 video samples and 812 analysable stills from an area of North Scotland called The Windsock. The Location Box for Windsock A (Figures 3 and 4), entered into Marine Recorder included the area from Latitude 59 52.118, Longitude -4 31.483 (North East Corner) to Latitude 59 16.020, Longitude -5 1.467 (South West Corner).

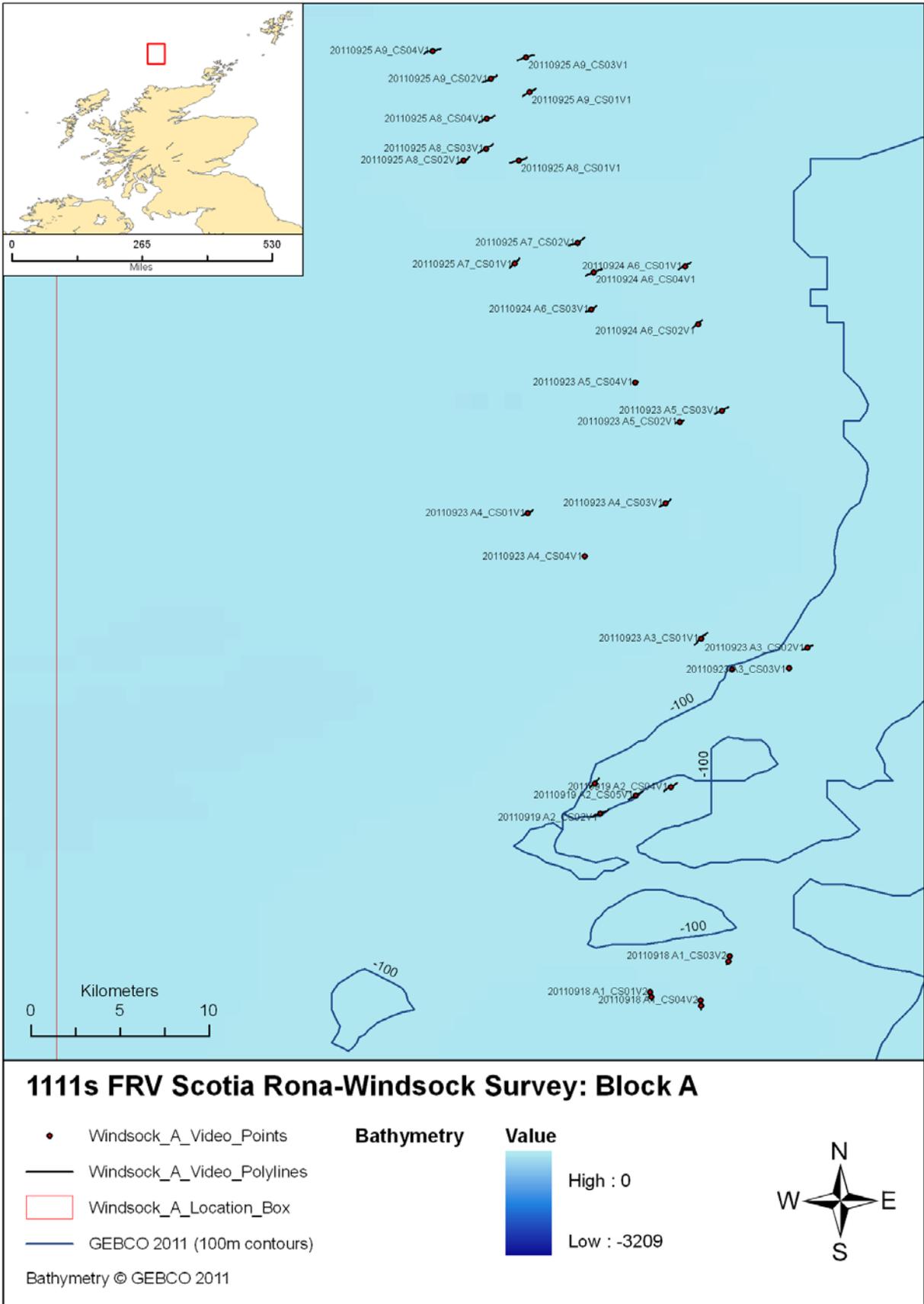


Figure 3. Map showing the location of the Windsock A survey area (Windsock A Location Box), individual video samples (Windsock A Video Polylines) and video sample centre points (Windsock A Video Points).

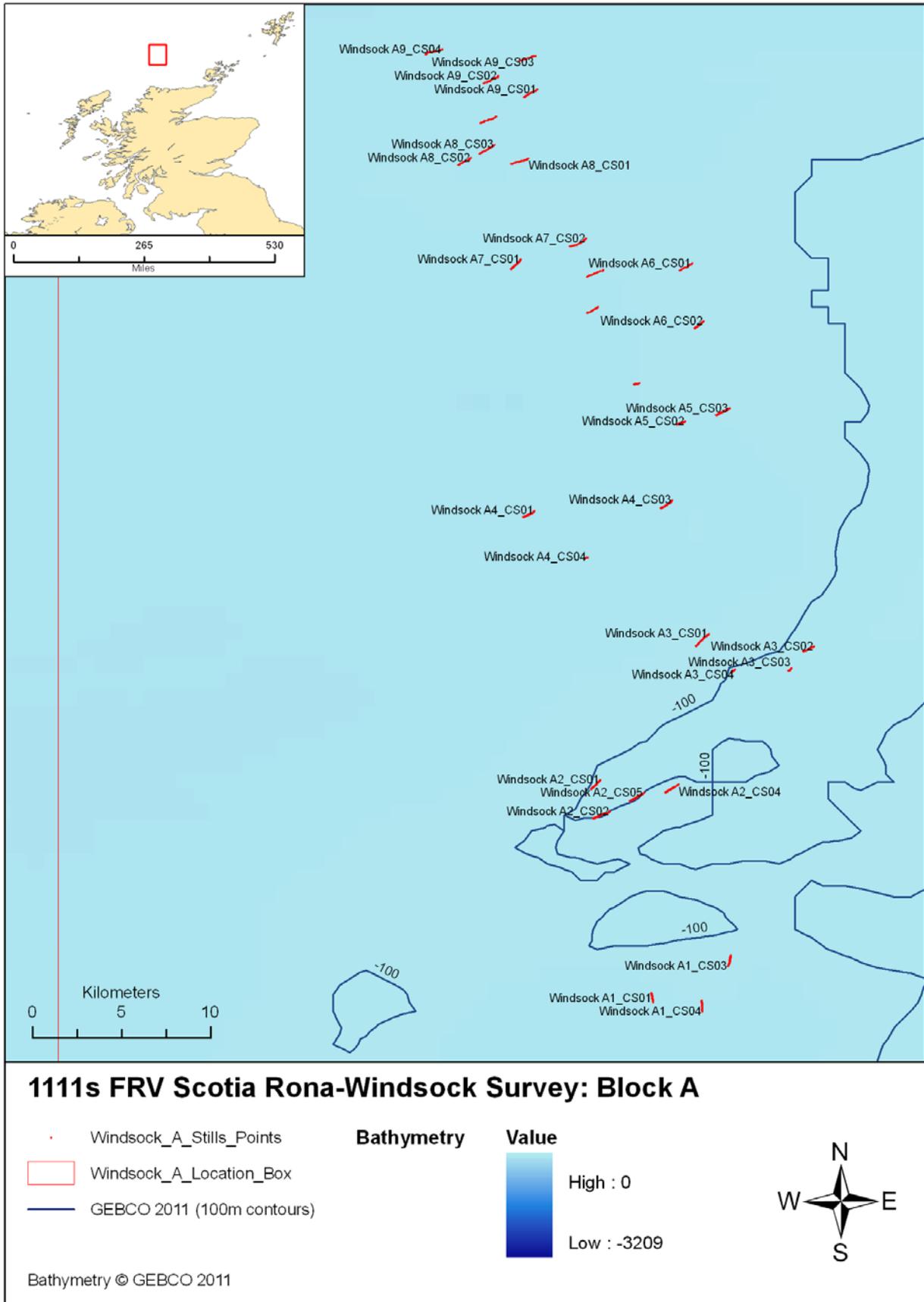


Figure 4. Map showing the location of the Windsock A survey area (Windsock A Location Box) and photo samples (stills) analysed (Windsock A Stills Points).

3.2.1.1 Description of habitat types and biotopes present

Windsock A video samples mainly comprised offshore circalittoral coarse and mixed sediments and offshore circalittoral sands. Additionally areas of boulder and cobble reef were identified amongst offshore sediment habitats and these were assigned rock biotopes.

Biotopes assigned to Windsock A habitats primarily of the offshore habitats SS.SCS.OCS, SS.SMx.OMx, SS.SSa.OSa, mosaics of these offshore sediments with moderate or high energy boulder and cobble reef (CR.HCR). In areas with greatest boulder and cobble densities, a hydroid turf biotope was assigned (SS.SMx.CMx.FluHyd) and in areas with high sponge densities, a sparse variant of CR.HCR.DpSp.PhaAxi(sparse) was assigned.

Table 4 shows the biotopes and mosaics assigned to entire video sample, whilst Table 5 itemises each biotope and the number of still images and video habitats assigned. Table 6 provides habitat descriptions together with biotopes assigned to each video sample (or each different habitat of the tow).

Table 4. Biotope codes and names assigned to Windsock A video samples and numbers of video samples that each biotope was assigned to.

Biotope code	Biotope name	No of video samples present
CR.HCR.DpSp.PhaAxi(sparse)	Proposed biotope within CR.MCR	3
Mosaic of SS.SCS.OCS & SS.SSa.OSa	Offshore circalittoral coarse sediment & Offshore circalittoral sand	4
Mosaic of SS.SCS.OCS, SS.SMx.CMx.FluHyd, CR.HCR.DpSp.PhaAxi(sparse) & SS.SSa.OSa	Offshore circalittoral coarse sediment; Flustra foliacea & Hydrallmania falcata on tide-swept circalittoral mixed sediment; Proposed biotope within CR.MCR & Offshore circalittoral sand	1
Mosaic of SS.SCS.OCS, SS.SMx.OMx & CR.HCR.DpSp.PhaAxi(sparse)	Offshore circalittoral coarse sediment; Offshore circalittoral mixed sediments & Proposed biotope within CR.MCR	3
Mosaic of SS.SCS.OCS, SS.SMx.OMx & SS.SMx.CMx.FluHyd(sparse)	Offshore circalittoral coarse sediment; Offshore circalittoral mixed sediments & Proposed change to SS.SMx.CMx.FluHyd	1
Mosaic of SS.SMx.OMx & CR.HCR.DpSp.PhaAxi(sparse)	Offshore circalittoral mixed sediments & Proposed biotope within CR.MCR	1
Mosaic of SS.SMx.OMx & SS.SMx.CMx.FluHyd(sparse)	Offshore circalittoral mixed sediments & Proposed change to SS.SMx.CMx.FluHyd	1
Mosaic of SS.SSa.OSa & SS.SCS.OCS	Offshore circalittoral sand & Offshore circalittoral coarse sediment	1
Mosaic of SS.SSa.OSa, SS.SMx.OMx & CR.HCR.DpSp.PhaAxi(sparse)	Offshore circalittoral sand; Offshore circalittoral mixed sediments & Proposed biotope within CR.MCR	1
SS.SCS.OCS	Offshore circalittoral coarse sediment	7

Biotope code	Biotope name	No of video samples present
SS.SMx.OMx	Offshore circalittoral mixed sediments	8
SS.SSa.OSa	Offshore circalittoral sand	3

Table 5. Occurrence of biotopes within Windssock A video and stills samples (includes biotopes described within mosaics).

Biotope Code	Biotope Name	Number of Video Samples with Biotope	Number of Stills Samples with Biotope
CR.HCR.DpSp.PhaAxi(sparse)	Proposed biotope within CR.MCR	9	108
SS.SCS.OCS	Offshore circalittoral coarse sediment	17	299
SS.SMx.CMX.FluHyd(sparse)	Sparse <i>Flustra foliacea</i> and <i>Hydrallmania falcata</i> on tide-swept circalittoral mixed sediment	2	30
SS.SMx.CMX.FluHyd	<i>Flustra foliacea</i> and <i>Hydrallmania falcata</i> on tide-swept circalittoral mixed sediment	1	3
SS.SMx.OMx	Offshore circalittoral mixed sediments	15	259
SS.SSa.OSa	Offshore circalittoral sand	10	115

Two biotopes assigned to Windssock A video and stills samples did not fit well within the Marine Habitat Classification and consequently the following changes to existing biotopes or new epifaunal biotopes are proposed to improve the biotope fit for offshore habitats (epifauna only):

Biotope Code	Closest Biotope
CR.HCR.DpSp.PhaAxi(sparse)	Most similar to <i>Phakellia ventilabrum</i> and Axinellid sponges on deep, wave-exposed circalittoral rock, but sparse/impoverished and probably moderate energy circalittoral rock, rather than high energy. This biotope is also found in deeper water than this biotope has been previously recorded and is found on stable boulders and cobbles.
SS.SMx.CMX.FluHyd(sparse)	Most similar to <i>Flustra foliacea</i> and <i>Hydrallmania falcata</i> on tide-swept circalittoral mixed sediment, but sparse/impoverished and found in deeper water than this biotope has been previously recorded.

Details and example images of the proposed biotopes are provided in Appendix 3.

Table 6. Habitat descriptions and biotope codes for Windsock A video samples.

Station/Tow	Video Sample	Habitat Description	Biotope Name	EUNIS Level	Biotope Code
Windsock A1_CS01	20110918 A1_CS01V1	Offshore circalittoral sediments at 115m BSL comprising predominantly sands with gravels & occasional small boulders & cobbles. Hard substrata with sessile epifauna including a cup sponge (possibly <i>Axinella infundibuliformis</i>).	Offshore circalittoral sand	4	SS.SSa.OSa
Windsock A1_CS01	20110918 A1_CS01V2	Offshore circalittoral mixed sediments comprising muddy sand & pebbles, cobbles & patches of small & medium boulders. Sparse sponge & branching bryozoan communities present therefore CR.HCR.DpSp.PhaAxi(sparse) at a depth of 114m.	Proposed biotope within CR.MCR	5	CR.HCR.DpSp.PhaAxi(sparse)
Windsock A1_CS03	20110918 A1_CS03V1	Offshore circalittoral rippled sand (SS.SSa.OSa) with relatively sparse epifauna at 117m.	Offshore circalittoral sand	4	SS.SSa.OSa
Windsock A1_CS03	20110918 A1_CS03V2	Offshore circalittoral sediments comprising sands (SS.SSa.OSa) at 117m. Occasional patches of coarser sediment comprising cobbles & boulders (SS.SMx.OMx), occasionally fading into CR.HCR.DpSp.PhaAxi(sparse).	Offshore circalittoral sand; Offshore circalittoral sand & Proposed biotope within CR.MCR	4 & 5	Mosaic of SS.SSa.OSa, SS.SMx.OMx & CR.HCR.DpSp.PhaAxi(sparse)
Windsock A1_CS04	20110918 A1_CS04V1	Offshore coarse sediment comprising silty coarse & fine sands, shell & stone gravel & empty shells (including <i>Ditrupea</i>) at approx 131m BSL. Unattached bryozoans, shell, pebbles in a hollow in the sediment. Polychaete tubes & <i>Lanice</i> present.	Offshore circalittoral sand	4	SS.SSa.OSa
Windsock A1_CS04	20110918 A1_CS04V2	Offshore mixed sediment comprising sands, gravels, pebbles, cobbles & boulders at 115m. Diverse epifauna on hard substrates CR.HCR.DpSp.PhaAxi(sparse).	Proposed biotope within CR.MCR	5	CR.HCR.DpSp.PhaAxi(sparse)
Windsock A2_CS01	20110919 A2_CS01V1	Offshore rock/coarse sediments of cobbles (possibly embedded), pebbles & small boulders. Associated epifauna include sponges & branching bryozoans & therefore CR.HCR.DpSp.PhaAxi(sparse) at 98m.	Proposed biotope within CR.MCR	5	CR.HCR.DpSp.PhaAxi(sparse)
Windsock A2_CS02	20110919 A2_CS02V1	Offshore circalittoral coarse sediments appearing in a banded mosaic (in waves) of coarse sand (SS.SSa.OSa) followed by gravels & pebbles (SS.SCS.OCS) in a ratio of 2:1. From 110 to 108m. Main epifauna of Serpulids.	Offshore circalittoral sand & Offshore circalittoral coarse sediment	4	Mosaic of SS.SSa.OSa & SS.SCS.OCS
Windsock A2_CS04	20110919 A2_CS04V1	Sand and gravel with occasional small boulders (SS.SCS.OCS) into cobbles and boulders (SS.SMx.CMx.FluHyd) CR.HCR.DpSp.PhaAxi(sparse) and then briefly into coarse sand (SS.SSa.OSa) before fading back into SS.SCS.OCS.	Offshore circalittoral coarse sediment; <i>Flustra foliacea</i> and <i>Hydrallmania falcata</i> on tide-swept	4 & 5	Mosaic of SS.SCS.OCS, SS.SMx.CMx.FluHyd, CR.HCR.DpSp.

Station/Tow	Video Sample	Habitat Description	Biotope Name	EUNIS Level	Biotope Code
			circalittoral mixed sediment; Proposed biotope within CR.MCR & Offshore circalittoral sand		PhaAxi(sparse) & SS.SSa.OSa
Windsock A2_CS05	20110919 A2_CS05V1	Offshore circalittoral coarse sediments (SS.SCS.OCS): sand and gravel with cobbles and small boulders (SS.SMx.OMx). Hard substrata with epifauna including a cup sponge (possibly <i>Axinella infundibuliformis</i>).	Offshore circalittoral coarse sediment; Offshore circalittoral sand & Proposed biotope within CR.MCR	4 & 5	Mosaic of SS.SCS.OCS, SS.SMx.OMx & CR.HCR.DpSp. PhaAxi(sparse)
Windsock A5_CS04	20110923 A5_CS04V1	Offshore circalittoral coarse sediments at 115m BSL. Sand & gravel with occasional small boulders into cobbles & small boulders (SS.SMx.OMx). Hard substrata with sessile epifauna including a cup sponge (possibly <i>Axinella infundibuliformis</i>).	Offshore circalittoral coarse sediment; Offshore circalittoral sand & Proposed biotope within CR.MCR	4 & 5	Mosaic of SS.SCS.OCS, SS.SMx.OMx & CR.HCR.DpSp. PhaAxi(sparse)
Windsock A5_CS03	20110923 A5_CS03V1	Offshore circalittoral coarse or mixed sediments of just one habitat (SS.SCS.OCS) at 115-117m. Mainly gravel & pebbles with occasional small boulders. Dominate epifauna of serpulids & branching bryozoans	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
Windsock A5_CS02	20110923 A5_CS02V1	Offshore circalittoral coarse sediments at 115m. Sand & gravel with occasional mixed cobbles & small boulders (SS.SMx.OMx). Hard substrata with sessile epifauna including a cup sponge (possibly <i>Axinella infundibuliformis</i>) - CR.HCR.DpSp.PhaAxi(sparse).	Offshore circalittoral coarse sediment; Offshore circalittoral sand & Proposed biotope within CR.MCR	4	Mosaic of SS.SCS.OCS, SS.SMx.OMx & CR.HCR.DpSp. PhaAxi(sparse)
Windsock A4_CS03	20110923 A4_CS03V1	Offshore coarse sediment comprising silty coarse & fine sands, shell & stone gravel, empty shells (including <i>Ditrupa</i>), pebbles & small boulders at approx 132m BSL. Sparse epifauna present including branching bryozoans & faunal crusts on the boulders.	Offshore circalittoral coarse sediment & Offshore circalittoral sand	4	Mosaic of SS.SCS.OCS & SS.SSa.OSa
Windsock A4_CS01	20110923 A4_CS01V1	Offshore circalittoral coarse sediments (SS.SCS.OCS) at 134m. Coarse sand in waves with gravel & empty shell (including <i>Ditrupa</i>) in the troughs. Around 50% of the time there is no shell & finer sand (SS.SSa.OSa) Sparse epifauna in both biotopes.	Offshore circalittoral coarse sediment & Offshore circalittoral sand	4	Mosaic of SS.SCS.OCS & SS.SSa.OSa
Windsock A4_CS04	20110923 A4_CS04V1	Offshore circalittoral coarse sediments (SS.SCS.OCS) at 128m. Coarse sand in waves with gravel and empty shell	Offshore circalittoral coarse sediment &	4	Mosaic of SS.SCS.OCS &

Station/Tow	Video Sample	Habitat Description	Biotope Name	EUNIS Level	Biotope Code
		(including numerous Ditrupa shells) in the troughs. The end 33% there is no shell and finer sand (SS.SSa.OSa) Sparse epifauna in both biotopes.	Offshore circalittoral sand		SS.SSa.OSa
Windsock A3_CS01	20110923 A3_CS01V1	Offshore circalittoral mixed sediments (SS.SMx.OMx) at 110 - 108m. Coarse sand in waves with shell gravel and empty shell in the troughs. Sparse epifauna. One habitat.	Offshore circalittoral sand	4	SS.SMx.OMx
Windsock A3_CS04	20110923 A3_CS04V1	Offshore circalittoral mixed coarse sediments (SS.SMx.OMx) at 101m.. Coarse sand in waves with gravel and empty shell in the troughs with occasional boulders. Faunal turf on boulders, Asteroidea and two Triglidae.	Offshore circalittoral sand	4	SS.SMx.OMx
Windsock A3_CS03	20110923 A3_CS03V1	Offshore circalittoral mixed coarse sediments (SS.SCS.OCS) at 93 - 96m Coarse gravel in waves with pebbles and empty shell in the troughs with occasional boulders. Faunal turf on boulders.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
Windsock A3_CS02	20110923 A3_CS02V1	Offshore circalittoral coarse mixed sediments. Sediment mainly comprising pebbles, gravel, cobbles and empty shell with occasional boulders. Faunal turf on boulders. Many serpulids on stones. Occasional <i>U. felina</i> and <i>A. rubens</i> .	Offshore circalittoral sand	4	SS.SMx.OMx
Windsock A6_CS02	20110924 A6_CS02V1	Offshore circalittoral coarse sediments (SS.SCS.OCS) into mixed sediments (SS.SMx.OMx) comprising pebbles, gravel, cobbles and empty shell with occasional boulders. Sediments become into SS.SMx.CMx.FluHyd(sparse). Sand waves also present.	Offshore circalittoral coarse sediment; Offshore circalittoral sand & Proposed change to SS.SMx.CMx.FluHyd	4 & 5	Mosaic of SS.SCS.OCS, SS.SMx.OMx & SS.SMx.CMx.FluHyd(sparse)
Windsock A6_CS03	20110924 A6_CS03V1	Offshore circalittoral coarse sediments at 115m BSL. Sand & gravel with occasional small boulders into cobbles & small boulders (SS.SMx.OMx). Hard substrata with sessile epifauna including a cup sponge (possibly <i>Axinella infundibuliformis</i>).	Offshore circalittoral sand	4	SS.SMx.OMx
Windsock A6_CS01	20110924 A6_CS01V1	Offshore circalittoral mixed sediments (SS.SMx.OMx). Coarse sediments mainly comprising pebbles, gravel, cobbles & empty shell with occasional boulders. Sand waves also present. Triglidae, Asteroidea & <i>Actiniaria</i> (possibly <i>Urticina felina</i>)	Offshore circalittoral sand	4	SS.SMx.OMx
Windsock A6_CS04	20110924 A6_CS04V1	Offshore circalittoral mixed sediments (SS.SMx.OMx) mainly comprising pebbles, gravel, cobbles & empty shell with occasional boulders. Sand waves also present. Dominant	Offshore circalittoral sand & Proposed change to	4 & 5	Mosaic of SS.SMx.OMx & SS.SMx.CMx.FI

Station/Tow	Video Sample	Habitat Description	Biotope Name	EUNIS Level	Biotope Code
		epifauna of serpulids & branching bryozoan (possibly <i>Omalosecosa ramulosa</i>).	SS.SMx.CMx.FluHyd		uHyd(sparse)
Windsock A7_CS01	20110925 A7_CS01V1	Offshore circalittoral mixed sediments (SS.SMx.OMx) comprising sand, pebbles, gravel, cobbles, occasional boulders & sand waves. Mosaic between sandy habitat & cobbly habitat, the two fade into one another, starting coarse then going finer & then back.	Offshore circalittoral sand	4	SS.SMx.OMx
Windsock A7_CS02	20110925 A7_CS02V1	Offshore mixed sediments (SS.SMx.OMx) & cobble reef (CR.HCR.DpSp.PhaAxi(sparse)). Mainly cobbles & pebbles with small boulders. Rich epifauna of sponges (including a cup sponge) & branching bryozoans (possibly <i>Omalosecosa ramulosa</i>).	Offshore circalittoral sand & Proposed biotope within CR.MCR	4 & 5	Mosaic of SS.SMx.OMx & CR.HCR.DpSp.PhaAxi(sparse)
Windsock A8_CS01	20110925 A8_CS01V1	Offshore circalittoral mixed sediments (SS.SMx.OMx) mainly comprising pebbles, gravel, cobbles and occasional boulders. Many serpulids also branching bryozoans and sponges. Large gadoid fish.	Offshore circalittoral sand	4	SS.SMx.OMx
Windsock A8_CS03	20110925 A8_CS03V1	Offshore circalittoral coarse sediments (SS.SCS.OCS) mainly comprising pebbles, gravel, cobbles and empty shell with occasional boulders. Initially coarse sand then fading into more coarse sediments. Dominant epifauna of serpulids and scallops.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
Windsock A8_CS02	20110925 A8_CS02V1	Offshore circalittoral mixed coarse sediments (SS.SMx.OMx) mainly comprising pebbles, gravel, cobbles and empty shell. Sand waves also present. Dominant epifauna of serpulids and branching bryozoan (possibly <i>Omalosecosa ramulosa</i>).	Offshore circalittoral sand	4	SS.SMx.OMx
Windsock A8_CS04	20110925 A8_CS04V1	Relatively barren offshore coarse sands and sediments (SS.SCS.OCS). Main epifauna was Paguridae.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
Windsock A9_CS01	20110925 A9_CS01V1	Offshore circalittoral coarse sediments at 115m BSL. Sand & gravel with occasional small boulders into cobbles & small boulders (SS.SMx.OMx). Hard substrata with sessile epifauna including a cup sponge (possibly <i>Axinella infundibuliformis</i>).	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
Windsock A9_CS02	20110925 A9_CS02V1	Offshore circalittoral sediments comprising sands (SS.SSa.OSa) at 117m. Occasional patches of coarser sediment comprising cobbles & boulders (SS.SMx.OMx), occasionally fading into CR.HCR.DpSp.PhaAxi(sparse).	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
Windsock	20110925	Offshore circalittoral coarse sediments: slightly silty sands,	Offshore circalittoral	4	Mosaic of

Station/Tow	Video Sample	Habitat Description	Biotope Name	EUNIS Level	Biotope Code
A9_CS03	A9_CS03V1	gravels, pebbles, cobbles & occasional small boulders at approx 127m BSL. Sparse epifauna including <i>Actiniaria</i> , serpulids and a <i>Parazoanthus</i> sp (U) or possibly small <i>Lophelia colonies</i> .	coarse sediment & Offshore circalittoral sand		SS.SCS.OCS & SS.SSa.OSa
Windssock A9_CS04	20110925 A9_CS04V1	Offshore circalittoral coarse mixed sediments comprising sands with gravel, pebbles, cobbles & small boulders at 128 metres BSL. Main epifauna included Serpulids, Hydroids, Asteroidea & sponges.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS

3.2.1.2 Description of MPA search features present

Offshore subtidal sands and gravels were recorded at all stations, either in their entirety or as a mosaic with other habitats (Table 6), bar those where CR.HCR.DpSp were observed (see below). Those samples where sands, coarse sediment or mixed sediment were the basis for the habitat are encompassed by this search feature.

Deep sponge communities (CR.HCR.DpSp) were recorded at the following stations:

Station	Sample	Method	Lat	Long
Windsock A1_CS01	20110918 A1_CS01V2	Towed video	59.308758	-4.72497
Windsock A1_CS03	20110918 A1_CS03V2	Towed video	59.32666	-4.685348
Windsock A1_CS04	20110918 A1_CS04V2	Towed video	59.304271	-4.699536
Windsock A2_CS01	20110919 A2_CS01V1	Towed video	59.418543	-4.750481
Windsock A7_CS02	20110925 A7_CS02V1	Towed video	59.69337	-4.758018

Fish within the family Ammodytidae including sand eels *Ammodytes marinus* and *A. tobianus* were recorded at the following station:

Station	Sample	Method	Lat	Long
Windsock A2_CS02	20110919 A2_CS02V1	Towed video	59.402343	-4.745246

Arctica islandica were recorded at the following stations but were noted in Marine Recorder with uncertainty:

Station	Sample	Method	Lat	Long
Windsock A1_CS01	A1_CS01-photo007	Still image	59.30636	-4.72456
Windsock A1_CS05	A2_CS05-photo021	Still image	59.40909	-4.73257

Although not reef-forming, and a priority marine feature as opposed to a search feature, possible individuals of *Lophelia pertusa* (uncertain) were recorded at the following station:

Station	Sample	Method	Lat	Long
Windsock A9_CS03	A9_CS03-photo002	Still image	59.786128	-4.783948

3.2.1.3 Description of Annex 1 reef features present

Annex 1 Stony Reef

The Annex 1 stony reef habitat subtype was recorded at the following stations:

Station	Sample	Method	Lat	Long
Windsock A1_CS01	20110918 A1_CS01V2	Towed video	59.308758	-4.72497
Windsock A1_CS04	20110918 A1_CS04V2	Towed video	59.304271	-4.699536
Windsock A2_CS01	20110919 A2_CS01V1	Towed video	59.418543	-4.750481
Windsock A2_CS05	20110919 A2_CS05V1	Towed video	59.412035	-4.727748
Windsock A5_CS04	20110923 A5_CS04V1	Towed video	59.620506	-4.728081
Windsock A5_CS02	20110923 A5_CS02V1	Towed video	59.600351	-4.707833
Windsock A3_CS02	20110923 A3_CS02V1	Towed video	59.485683	-4.642883
Windsock A7_CS01	20110925 A7_CS01V1	Towed video	59.682908	-4.790801
Windsock A7_CS02	20110925 A7_CS02V1	Towed video	59.69337	-4.758018

Additionally Annex 1 stony reef habitat was recorded in 157 photos within the following video samples:

Sample	Sample	Sample
20110918 A1_CS01V2	20110919 A2_CS05V1	20110924 A6_CS03V1
20110918 A1_CS03V2	20110923 A3_CS02V1	20110924 A6_CS04V1
20110918 A1_CS04V1	20110923 A3_CS04V1	20110925 A7_CS02V1
20110918 A1_CS04V2	20110923 A5_CS02V1	20110925 A8_CS01V1
20110919 A2_CS01V1	20110923 A5_CS04V1	20110925 A9_CS03V1
20110919 A2_CS04V1	20110924 A6_CS02V1	20110925 A9_CS04V1

3.2.1.4 Species of conservation interest in the Windsock A survey area

The following species of conservation interest were recorded during the analysis of the Windsock A imagery:

Species	Conservation Interest
<i>Raja radiata</i>	IUCN (2001) Vulnerable
<i>Arctica islandica</i>	OSPAR Convention
<i>Halcampoides elongates</i>	Scottish Biodiversity List, Nationally scarce marine species
<i>Merlangius merlangus</i>	Scottish Biodiversity List, UK Biodiversity Action Plan priority species
Ammodytidae	Scottish Biodiversity List, UK Biodiversity Action Plan priority species
<i>Pachycerianthus sp</i>	UK Biodiversity Action Plan priority species
<i>Hoplangia durotrix</i>	Nationally rare marine species
<i>Molva molva</i>	Scottish Biodiversity List, UK Biodiversity Action Plan priority species
<i>Gadus morhua</i>	Scottish Biodiversity List, UK Biodiversity Action Plan priority species, OSPAR Convention
<i>Actinauge richardi</i>	Scottish Biodiversity List
<i>Hippoglossus hippoglossus</i>	UK Biodiversity Action Plan priority species

3.2.2 Rona-Windsock survey: Block B

Block B of the 2011 1111s FRV Scotia Rona-Windsock survey (Windsock B) included 18 video samples and 570 stills taken from an area of North Scotland called The Windsock (Figure 5 and 6), west of Block A. The Location Box for Windsock B, entered into Marine Recorder included the area from Latitude 59 36.042, Longitude -5 45.258 (North East Corner) to Latitude 59 16.316, Longitude -6 8.633 (South West Corner). Figure 5 shows the location of Windsock B video samples and Figure 6 the location of Windsock B still images analysed within this project.

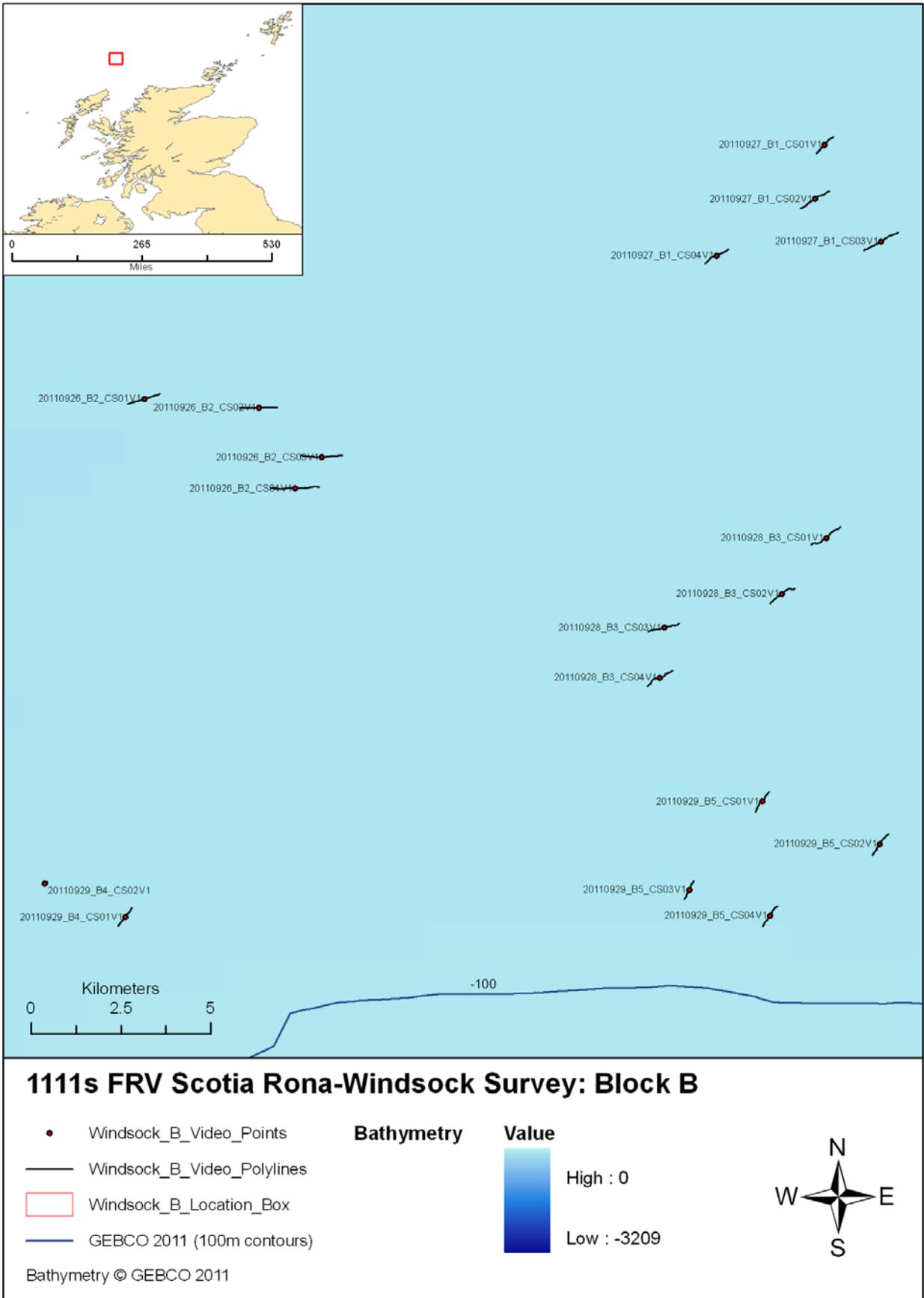


Figure 5. Map showing the location of the Windsock B survey area (Windsock B Location Box), individual video samples (Windsock B Video Polylines) and video sample centre points (Windsock B Video Points).

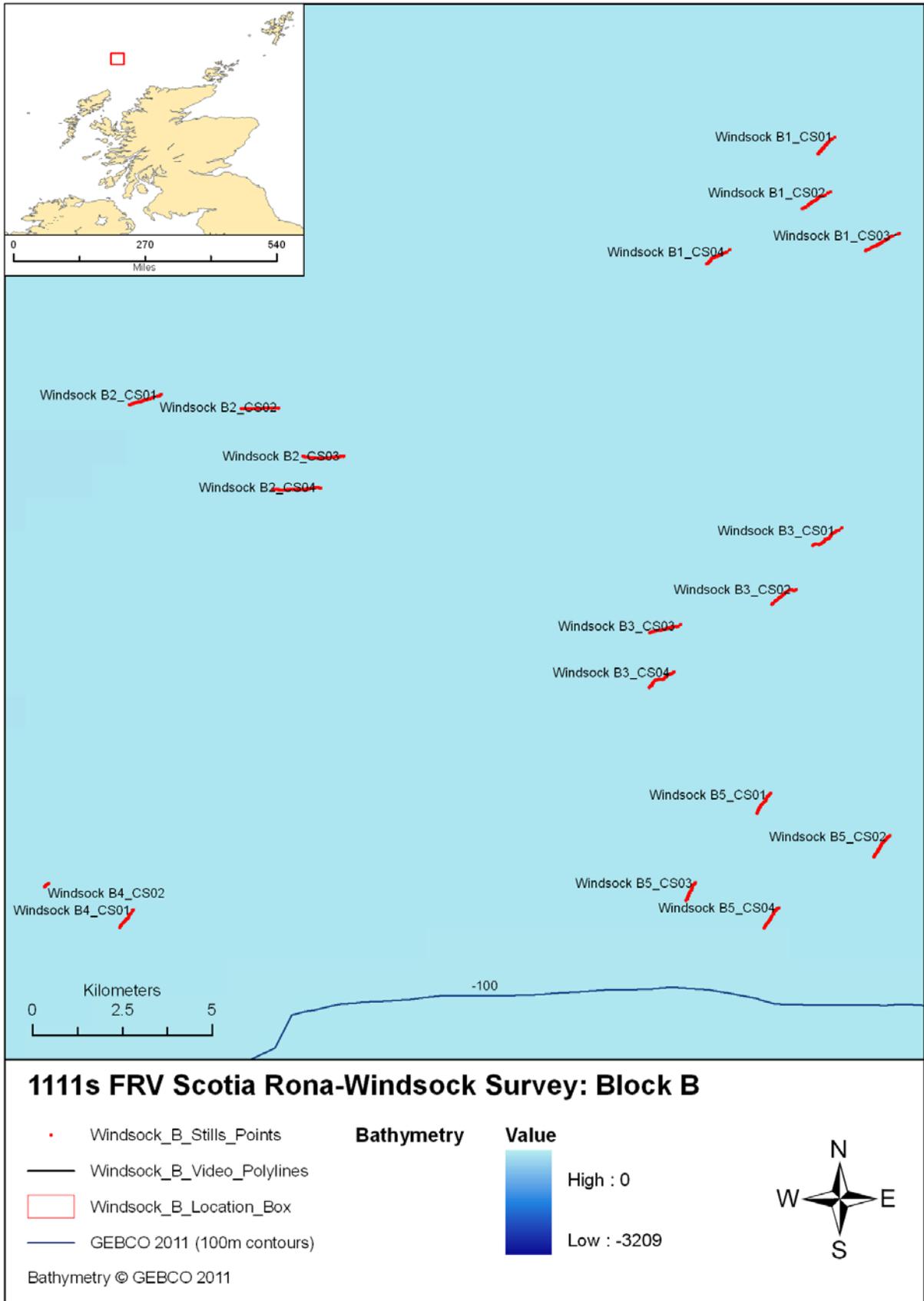


Figure 6. Map showing the location of the Windsock B survey area (Windsock B Location Box) and photo samples (stills) analysed (Windsock B Stills Points).

3.2.2.1 Description of habitat types and biotopes present

Windsock B video samples included offshore coarse sediments, offshore sands, offshore mixed sediments and mosaics of offshore sediment habitats at depths ranging from 120 to 140 metres below sea level.

Biotopes assigned to Windsock B habitats were primarily of the offshore sediment habitats SS.SCS.OCS, SS.SSa.OSa, SS.SMx.OMx, and mosaics of offshore sediments. In areas with greater densities of boulders and cobbles, a sparse/impoverished faunal crust biotope was assigned. Epifauna was only recorded as sparse throughout the Windsock B area.

Table 7 shows the biotopes and mosaics assigned to entire video samples, whilst Table 8 itemises each biotope and the number of still images and video habitats assigned. Table 9 provides habitat descriptions together with biotopes assigned to each video sample (or each different habitat of the tow).

Table 7. Biotope codes and names assigned to Windsock B video samples. Numbers of video samples that each biotope was assigned to.

Biotope code	biotope name	Video samples present
Mosaic of SS.SCS.OCS & SS.SMx.OMx	Offshore circalittoral coarse sediment & Offshore circalittoral mixed sediments	1
Mosaic of SS.SCS.OCS & SS.SMx.OMx(lacks muddy element)	Offshore circalittoral coarse sediment & Proposed change to SS.SMx.OMx	1
Mosaic of SS.SCS.OCS & SS.SSa.OSa	Offshore circalittoral coarse sediment & Offshore circalittoral sand	3
Mosaic of SS.SCS.OCS, SS.SMx.OMx(lacks muddy element) & CR.MCR(spirorbids, spiky bryozoan & bryozoan crust)	Offshore circalittoral coarse sediment; Proposed change to SS.SMx.OMx & Proposed biotope within CR.MCR	1
Mosaic of SS.SMx.OMx & CR.MCR(spirorbids, spiky bryozoan & bryozoan crust)	Offshore circalittoral sand & Proposed biotope within CR.MCR	1
Mosaic of SS.SSa.OSa & SS.SCS.OCS	Offshore circalittoral sand & Offshore circalittoral coarse sediment	2
Mosaic of SS.SSa.OSa & SS.SMx.OMx(lacks muddy element)	Offshore circalittoral sand & Proposed change to SS.SMx.OMx	1
Mosaic of SS.SSa.OSa, SS.SMx.OMx(lacks muddy element) & CR.MCR(spirorbids, spiky bryozoan & bryozoan crust)	Offshore circalittoral sand; Proposed change to SS.SMx.OMx & Proposed biotope within CR.MCR	1
SS.SCS.OCS	Offshore circalittoral coarse sediment	4
SS.SSa.OSa	Offshore circalittoral sand	3

Table 8. Occurrence of biotopes within Windssock B video and stills samples (includes biotopes described within mosaics).

Biotope Code	Biotope Name	Number of Video Samples with Biotope	Number of Stills Samples with Biotope
CR.HCR.DpSp.PhaAxi(sparse)	Proposed biotope within CR.MCR		1
CR.HCR.Xfa	Mixed faunal turf communities		1
CR.HCR.Xfa	Mixed faunal turf communities		6
CR.HCR.XFa(sparse)	Sparse mixed faunal turf communities		3
CR.MCR(spirorbids & bryozoan crust)	Proposed biotope within CR.MCR		3
CR.MCR(spirorbids, spiky bryozoan & bryozoan crust)	Proposed biotope within CR.MCR	2	66
SS.SCS.OCS	Offshore circalittoral coarse sediment	12	213
SS.SMx.CMx.FluHyd(sparse & lacks <i>Flustra/Securiflustra</i>)	Proposed change to SS.SMx.CMx.FluHyd		4
SS.SMx.CMx.FluHyd(sparse)	Sparse <i>Flustra foliacea</i> and <i>Hydrallmania falcata</i> on tide-swept circalittoral mixed sediment		6
SS.SMx.OMx	Offshore circalittoral mixed sediments	2	21
SS.SMx.OMx(lacks muddy element)	Proposed change to SS.SMx.OMx	4	76
SS.SSa.OSa	Offshore circalittoral sand	10	263

Several biotopes assigned to Windssock B video and stills samples did not fit well within the Marine Habitat Classification and consequently the following changes or new epifaunal biotopes are proposed to improve fit for offshore habitats (epifauna):

Biotope Code	Closest Biotope
CR.HCR.DpSp.PhaAxi(sparse)	Most similar to <i>Phakellia ventilabrum</i> & Axinellid sponges on deep, wave-exposed circalittoral rock, but sparse/impoverished and probably moderate energy circalittoral rock, rather than high energy. This biotope is also found in deeper water than biotope has been previously recorded and found on stable boulders and cobbles.
CR.HCR.XFa(sparse)	Most similar to Mixed faunal turf communities but sparse /impoverished so less turf-like and probably moderate energy circalittoral rock, rather than high energy. Additionally biotope found in deeper water than previously recorded.
CR.MCR(spirorbids & bryozoan crust)	Most similar to biotopes within the Echinoderms & crustose communities complex, however lacking echinoderms & algal crusts. Additionally biotope found in deeper water than previously recorded.
CR.MCR(spirorbids, spiky bryozoan & bryozoan crust)	Most similar to biotopes within the Echinoderms & crustose communities complex, however lacking echinoderms & algal crusts. Additionally biotope found in deeper water than previously recorded.
SS.SMx.CMx.FluHyd(sparse & lacks <i>Flustra/Securiflustra</i>)	Most similar to <i>Flustra foliacea</i> and <i>Hydrallmania falcata</i> on tide-swept circalittoral mixed sediment, but sparse/impoverished and lacking <i>Flustra/Securiflustra</i> . Additionally biotope found in deeper water than previously recorded.
SS.SMx.CMx.FluHyd(sparse)	Most similar to <i>Flustra foliacea</i> and <i>Hydrallmania falcate</i> on tide-swept circalittoral mixed sediment, but sparse/impoverished and found in deeper water than biotope has previously recorded.

Details and example images of the proposed biotopes are provided in Appendix 3.

Table 9. Habitat descriptions and biotope codes for Windsock B video samples.

Station / Tow	Video Sample Ref	Habitat Description	Biotope Name	EUNIS Level	Biotope Code
Windsock B1_CS01	20110927_B1_CS01V1	Circalittoral coarse sediment waves (10cm high) of coarse gravel and sand/pebbles with a dead whole shell repeat. Very high proportion of shell gravel of broken mollusc and Ditrupa shell. Very rare small boulders. Fauna very sparse: anemones and Paguridae.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
Windsock B1_CS02	20110927_B1_CS02V1	SS.SCS.OCS at approximately 129 metres BSL. Clean coarse sand and shell gravel with drifts of pebbles and fragments of dead shell and whole shells. Very occasional small boulders. Very sparse epifauna.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
Windsock B1_CS03	20110927_B1_CS03V1	Sediment waves of clean coarse shell sand and shell gravel with drifts of pebbles and fragments of dead shell and whole shells. Occasional cobbles and small to medium boulders. Fauna very sparse. Largely associated with the boulders.	Offshore circalittoral coarse sediment & Offshore circalittoral mixed sediments	4	Mosaic of SS.SCS.OCS & SS.SMx.OMx
Windsock B1_CS04	20110927_B1_CS04V1	SS.SCS.OCS at approximately 131 metres BSL. Clean coarse sand and gravel with a high proportion of shell. Scattered pebbles and several small boulders Fauna largely restricted to hydroids and bryozoan crusts and branching colonies on boulders.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
Windsock B2_CS01	20110926_B2_CS01V1	Seabed of cobbles, pebbles, slightly silty coarse sand and gravel. Scattered small and medium boulders, dens in some places. Fauna restricted to boulders: bryozoan crusts and branching colonies.	Offshore circalittoral mixed sediments & Proposed biotope within CR.MCR	4 & 5	Mosaic of SS.SMx.OMx & CR.MCR(spirorbids, spiky bryozoan & bryozoan crust)
Windsock B2_CS02	20110926_B2_CS02V1	Slightly silty coarse sand and gravel of shell and stone with drifts of pebbles and scattered boulders alternating with featureless sand/gravel sediment. Fauna restricted to boulders.	Offshore circalittoral coarse sediment & Proposed change to SS.SMx.OMx	4	Mosaic of SS.SCS.OCS & SS.SMx.OMx(lacks muddy element)
Windsock B2_CS03	20110926_B2_CS03V1	SS.SCS.OCS & SS.SSa.OSa at approximately 135 metres BSL. Slightly silty coarse sand of shell and stone with gravel, scattered pebbles and occasional small boulders. Fauna limited to boulders.	Offshore circalittoral coarse sediment & Offshore circalittoral sand	4	Mosaic of SS.SCS.OCS & SS.SSa.OSa
Windsock B2_CS04	20110926_B2_CS04V1	Clean coarse sand and gravel of shell and stone. Patchy drifts of pebbles. Very rare boulders at the start. Fauna impoverished, a few starfish. Bryozoan crusts and branching colonies on the rare boulders.	Offshore circalittoral coarse sediment & Offshore circalittoral sand	4	Mosaic of SS.SCS.OCS & SS.SSa.OSa
Windsock B3_CS01	20110928_B3_CS01V1	Sediment waves of clean coarse shell and stone sand and gravel with pebbles and medium boulders. Patches with bioturbation: mounds, and burrows. Fauna on boulders.	Offshore circalittoral coarse sediment; Proposed change to SS.SMx.OMx & Proposed biotope within CR.MCR	4 & 5	Mosaic of SS.SCS.OCS, SS.SMx.OMx(lacks muddy element) & CR.MCR(spirorbids, spiky bryozoan & bryozoan crust)

Station / Tow	Video Sample Ref	Habitat Description	Biotope Name	EUNIS Level	Biotope Code
Windsock B3_CS02	20110928_B3_CS02V1	SS.SCS.OCS at approximately metres BSL. Clean coarse shell sand and gravel, broken shell and drifts of pebbles and cobbles, rare small boulders. Fauna very sparse bryozoa on boulders. A few fish.	Offshore circalittoral coarse sediment	4	SS.SCS.OCS
Windsock B3_CS03	20110928_B3_CS03V1	SS.SCS.OCS & SS.SSa.OSa at approximately 131 metres BSL. Clean coarse shell sand and gravel, broken shell and scattered pebbles and occasional boulders. Last third of video rippled medium sand. Very limited fauna.	Offshore circalittoral coarse sediment & Offshore circalittoral sand	4	Mosaic of SS.SCS.OCS & SS.SSa.OSa
Windsock B3_CS04	20110928_B3_CS04V1	Sediment waves of clean, coarse shell sand and gravel with a few larger bits of broken shell. Occasional boulders and cobbles. Limited fauna most on boulders, though fish common. Plastic bag.	Offshore circalittoral sand & Proposed change to SS.SMx.OMx	4	Mosaic of SS.SSa.OSa & SS.SMx.OMx(lacks muddy element)
Windsock B4_CS01	20110929_B4_CS01V1	SS.SSa.OSa at approximately 124 metres BSL. Clean coarse shell sand and gravel, with scattered broken shell and pebbles and rare small boulders. No bed forms evident. Fauna limited to Paguridae and starfish with bryozoa and hydroids on boulders.	Offshore circalittoral sand	4	SS.SSa.OSa
Windsock B4_CS02	20110929_B4_CS02V1	SS.SSa.OSa at approximately 129 metres BSL. Clean coarse shell sand and gravel, with scattered broken shell. Fauna very sparse apart from small fish and crustacea on sediment surface. Very little evidence of bioturbation.	Offshore circalittoral sand	4	SS.SSa.OSa
Windsock B5_CS01	20110929_B5_CS01V1	SS.SSa.OSa at approximately 126 metres BSL. Clean coarse shell sand and gravel with broken shell and a few scattered pebbles. Sediment waves. Fauna very sparse.	Offshore circalittoral sand	4	SS.SSa.OSa
Windsock B5_CS02	20110929_B5_CS02V1	Clean medium to coarse sand waves with scattered pebbles, occasional cobbles and boulders, broken shell. Fauna mostly limited to boulders and cobbles.	Offshore circalittoral sand; Proposed change to SS.SMx.OMx & Proposed biotope within CR.MCR	4 & 5	Mosaic of SS.SSa.OSa, SS.SMx.OMx(lacks muddy element) & CR.MCR(spirorbids, spiky bryozoan & bryozoan crust)
Windsock B5_CS03	20110929_B5_CS03V1	SS.SSa.OSa & SS.SCS.OCS at approximately 123 metres BSL. Clean coarse sand and gravel sediment waves with scattered pebbles and broken shell. Not possible to assess fauna.	Offshore circalittoral sand & Offshore circalittoral coarse sediment	4	Mosaic of SS.SSa.OSa & SS.SCS.OCS
Windsock B5_CS04	20110929_B5_CS04V1	SS.SSa.OSa & SS.SCS.OCS at approximately 120 metres BSL. Clean coarse sand and gravel sediment waves with scattered pebbles and broken shell. Serpulids on shell.	Offshore circalittoral sand & Offshore circalittoral coarse sediment	4	Mosaic of SS.SSa.OSa & SS.SCS.OCS

3.2.2.2 MPA search features present

Offshore subtidal sands and gravels were recorded at all stations, either in their entirety or as a mosaic with other harder substrata habitats (Table 9), bar those where CR.HCR or CR.MCR were observed. Those samples where sands, coarse sediment or mixed sediment were the basis for the habitat are encompassed by this search feature.

Fish within the family Ammodytidae were identified, and included in this family are sand eels *Ammodytes marinus* and *A. tobianus*. Ammodytidae were recorded either in video samples or stills at the following stations:

Station	Sample	Method	Lat	Long
Windsock B1_CS02	20110927_B1_CS02V1	Towed video	59.524385	-5.846723
Windsock B5_CS01	20110929_B5_CS01V1	Towed video	59.37281	-5.861695
Windsock B5_CS02	20110929_B5_CS02V1	Towed video	59.362246	-5.831528
Windsock B5_CS02	B5_CS02-photo001	Still image	59.361840	-5.832130
Windsock B5_CS02	B5_CS02-photo032	Still image	59.357960	-5.835100
Windsock B5_CS03	20110929_B5_CS03V1	Towed video	59.35004	-5.88078
Windsock B5_CS03	B5_CS03-photo007	Still image	59.349200	-5.881500
Windsock B5_CS03	B5_CS03-photo015	Still image	59.347840	-5.882030
Windsock B5_CS03	B5_CS03-photo025	Still image	59.346520	-5.882630
Windsock B5_CS04	20110929_B5_CS04V1	Towed video	59.344035	-5.85802
Windsock B5_CS04	B5_CS04-photo018	Still image	59.340790	-5.862060
Windsock B5_CS04	B5_CS04-photo020	Still image	59.340600	-5.862230
Windsock B5_CS04	B5_CS04-photo022	Still image	59.340380	-5.862370
Windsock B5_CS04	B5_CS04-photo026	Still image	59.339450	-5.863080

3.2.2.3 Description of Annex 1 reef features present

The Annex 1 stony reef habitat subtype was recorded at the following stations:

Station	Sample	Method	Lat	Long
Windsock B2_CS01	20110926_B2_CS01V1	Towed video	59.47342	-6.013765
Windsock B2_CS01	B2_CS01-photo001	Still image	59.473140	-6.014350
Windsock B2_CS01	B2_CS01-photo002	Still image	59.472990	-6.014730
Windsock B2_CS01	B2_CS01-photo003	Still image	59.472890	-6.014880
Windsock B2_CS01	B2_CS01-photo004	Still image	59.472870	-6.014920
Windsock B2_CS01	B2_CS01-photo005	Still image	59.472840	-6.014970
Windsock B2_CS01	B2_CS01-photo006	Still image	59.472820	-6.015030
Windsock B2_CS01	B2_CS01-photo007	Still image	59.472790	-6.015160
Windsock B2_CS01	B2_CS01-photo008	Still image	59.472700	-6.015420
Windsock B2_CS01	B2_CS01-photo009	Still image	59.472350	-6.016550
Windsock B2_CS01	B2_CS01-photo010	Still image	59.472260	-6.016900
Windsock B2_CS01	B2_CS01-photo024	Still image	59.471520	-6.019130
Windsock B2_CS02	B2_CS02-photo006	Still image	59.469690	-5.985860
Windsock B2_CS02	B2_CS02-photo015	Still image	59.469640	-5.989370
Windsock B3_CS01	B3_CS01-photo015	Still image	59.437410	-5.846970
Windsock B3_CS01	B3_CS01-photo016	Still image	59.437300	-5.847040
Windsock B3_CS01	B3_CS01-photo017	Still image	59.437230	-5.847070
Windsock B3_CS01	B3_CS01-photo019	Still image	59.436900	-5.847360
Windsock B3_CS01	B3_CS01-photo028	Still image	59.436000	-5.848600
Windsock B3_CS01	B3_CS01-photo029	Still image	59.435850	-5.848790
Windsock B3_CS01	B3_CS01-photo037	Still image	59.435000	-5.851420

Windsock B3_CS04	B3_CS04-photo004	Still image	59.402760	-5.886820
Windsock B5_CS02	B5_CS02-photo007	Still image	59.361220	-5.832880

3.2.2.4 Species of conservation interest in the Windsock B survey area

The following species of conservation interest were recorded during the analysis of the Windsock B imagery:

Species	Conservation Interest
Ammodytidae	Scottish Biodiversity List, UK Biodiversity Action Plan priority species
<i>Molva molva</i>	Scottish Biodiversity List, UK Biodiversity Action Plan priority species

3.3 2011 MSS Rockall survey

Imagery from the 2011 MSS Rockall survey (Rockall) included seven video tows, totalling 23 hours and 12 minutes of footage. After an initial review of the supplied imagery, accurate identification of taxa from the seven video tows was considered unlikely due to the high speed of the tow and the distance the camera was from the seabed. The footage was considered suitable for identifying Annex 1 reef habitats and some of the broad-scale offshore Scottish MPA project search features (detailed in Appendix 2). All seven tows were determined to contain multiple habitats and consequently were split into clips representing a single EUNIS level 3 habitat (since EUNIS has a deep water section). Splitting the tows resulted in a total of 133 video clips, each representing a single video sample.

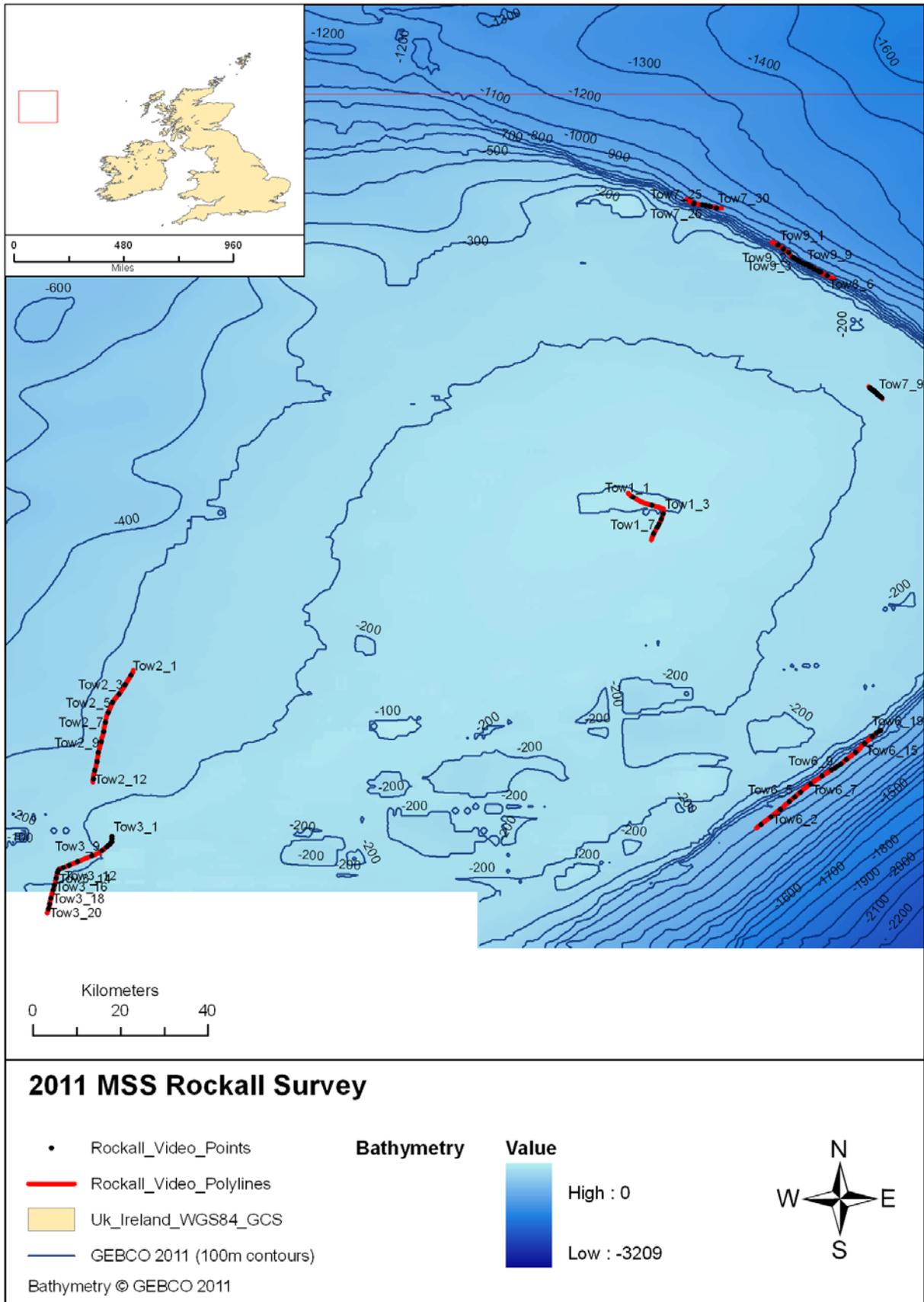


Figure 7. Map showing the location of the 2011 Rockall survey area (Rockall Location Box), individual video samples (Rockall Video Polylines) and video sample centre points (Rockall Video Points).

3.3.1 Description of habitat types present

EUNIS habitat types assigned to Rockall video samples included deep sea mixed substrata, deep sea sand, deep sea muddy sand, deep sea rock including bedrock and boulders, and mosaics of these deep sea habitats (Tables 10 and 11). Table 12 describes in further detail the habitats and biotopes assigned to each video sample within the Rockall survey area.

Table 10. EUNIS habitat codes and names assigned to Rockall video samples and the number of video samples that each biotope was assigned to.

EUNIS code	EUNIS name	Video samples present
A6.14	Boulders on the deep-sea bed	3
A6.2	Deep sea mixed substrata	25
A6.1: A6.11 & A6.14	Deep sea rock A6.1: comprising Deep sea bedrock & Boulders on the deep sea bed	2
A6.3	Deep-sea sand	21
A6.4	Deep-sea muddy sand	13
A6.1	Deep-sea rock	18
A6.1: A6.11 (30%), A6.14 (40%) & A6.2 (30%)	Deep-sea rock mosaic comprising Deep sea bedrock 30%, Boulders on deep sea bed 40% & Deep sea mixed substrata 30%.	4
A6.14 (40%), A6.11 (10%) & A6.2 (50%)	Mosaic of Boulders on the deep sea bed 40% & Deep sea bedrock 10% & Deep sea mixed substrata 50%.	1
A6.2 (80%) & A6.14 (20%)	Mosaic of Deep sea mixed substrata 80% & Boulders on the deep sea bed 20%.	1
A6.2 (90%), A6.14 (8%) & A6.11 (2%)	Mosaic of Deep sea mixed substrata 90% & Boulders on the deep sea bed 8% & Deep sea bedrock 2%.	4
A6.14 & A6.4	Mosaic of Deep sea rock comprising Boulders on the deep sea bed and Deep-sea muddy sand.	12
A6.11 & A6	Mosaic of Deep sea rock comprising Deep sea bedrock and Deep-sea muddy sand.	1
A6.2 & A6.1	Mosaic of Deep-sea mixed substrata & Deep sea rock.	2
A6.4 & A6.14	Mosaic of Deep-sea muddy sand & Boulders on the deep sea bed.	2

EUNIS code	EUNIS name	Video samples present
A6.1 & A6.14	Mosaic of Deep-sea rock & Boulders on the deep sea bed.	2

Table 11. Occurrence of biotopes within Rockall video samples (includes biotopes described within mosaics).

Biotope Code	Biotope Name	Number of Video Samples with Biotope
A6.11	Deep sea bedrock	12
A6.14	Boulders on the deep-sea bed	31
A6.2	Deep sea mixed substrata	37
A6.3	Deep-sea sand	21
A6.4	Deep-sea muddy sand	28

Table 12. Habitat descriptions and EUNIS habitat codes for Rockall video samples.

Station/Tow	Video Sample	Habitat Description	EUNIS Habitat Name	EUNIS Level	EUNIS Code
Rockall Bank 2011 Tow 1	Tow1_1	Series of habitats<100m long rippled sediment, dense scatter of pebbles on sediment, pavement of pebbles, cobbles & small boulders, scoured bedrock with sediment in gullies, ledges dropping to rippled sediment. Fauna restricted to surfaces high off seabed.	Deep-sea rock A6.1 mosaic comprising Deep sea bedrock A6.11 30%, Boulders on deep sea bed A6.14 40% & Deep sea mixed substrata A6.2 30%.	4 & 3	A6.11, A6.14 & A6.2
Rockall Bank 2011 Tow 1	Tow1_2	Series of habitats<100m long rippled sediment, dense scatter of pebbles on sediment, pavement of pebbles, cobbles & small boulders, scoured bedrock with sediment in gullies, ledges dropping to rippled sediment. Fauna restricted to surfaces high off seabed.	Deep-sea rock A6.1 mosaic comprising Deep sea bedrock A6.11 30%, Boulders on deep sea bed A6.14 40% & Deep sea mixed substrata A6.2 30%.	4 & 3	A6.11, A6.14 & A6.2
Rockall Bank 2011 Tow 1	Tow1_3	Series of habitats<100m long rippled sediment, dense scatter of pebbles on sediment, pavement of pebbles, cobbles & small boulders, scoured bedrock with sediment in gullies, ledges dropping to rippled sediment. Fauna restricted to surfaces high off seabed.	Deep-sea rock A6.1 mosaic comprising Deep sea bedrock A6.11 30%, Boulders on deep sea bed A6.14 40% & Deep sea mixed substrata A6.2 30%.	4 & 3	A6.11, A6.14 & A6.2
Rockall Bank 2011 Tow 1	Tow1_4	Series of habitats<100m long rippled sediment, dense scatter of pebbles on sediment, pavement of pebbles, cobbles & small boulders, scoured bedrock with sediment in gullies, ledges dropping to rippled sediment. Fauna restricted to surfaces high off seabed.	Deep-sea rock A6.1 mosaic comprising Deep sea bedrock A6.11 30%, Boulders on deep sea bed A6.14 40% & Deep sea mixed substrata A6.2 30%.	4 & 3	A6.11, A6.14 & A6.2
Rockall Bank 2011 Tow 1	Tow1_5	A seabed with mega-ripples of pale sand with pebbles and some broken shell in the troughs. Occasional outcrops of very low scoured bedrock and boulders virtually devoid of fauna.	Deep-sea mixed substrata A6.2.	3	A6.2
Rockall Bank 2011 Tow 1	Tow1_6	Frequent outcrops of low, very scoured bedrock surrounded by mega-ripples of pale sand with dark pebbles in the troughs. Slightly higher bedrock reef with possible deep sponge community and some epifauna.	Mosaic of Deep-sea mixed substrata A6.2 90% & Deep sea rock A6.1 10%.	3	A6.2 & A6.1
Rockall Bank 2011 Tow 1	Tow1_7	A seabed with mega-ripples of pale sand with pebbles and some broken shell in the troughs. Occasional outcrops of very low scoured bedrock and boulders virtually devoid of fauna. Occasional trawl marks.	Mosaic of Deep-sea mixed substrata A6.2 95% & Deep sea rock A6.1 5%.	3	A6.2 & A6.1

Station/Tow	Video Sample	Habitat Description	EUNIS Habitat Name	EUNIS Level	EUNIS Code
Rockall Bank 2011 Tow 2	Tow2_1	Level seabed with a mosaic of bioturbated muddy sand with outcrops of cobbles & small boulders 5-10m wide & 20-50m apart (20% of tow) with bright white sponge growths. Benthic fauna limited to Holothurians.	Mosaic of Deep-sea muddy sand A6.4 75% cover & Boulders on the deep sea bed 25%.	3 & 4	A6.4 & A6.14
Rockall Bank 2011 Tow 2	Tow2_2	Level seabed with a mosaic of bioturbated muddy sand with outcrops of cobbles & small boulders 5-10m wide & 20-50m apart (20% of tow) with bright white sponge growths. Benthic fauna limited to Holothurians and Actiniaria. <i>Lophelia</i> outcrops.	Mosaic of Deep-sea muddy sand A6.4 90% & Boulders on the deep sea bed 10%.	3 & 4	A6.4 & A6.14
Rockall Bank 2011 Tow 2	Tow2_3	Level seabed of bioturbated muddy sand with occasional scattered cobbles and small boulders. These sparse boulders and cobbles supporting bright white growths thought to be sponges. Benthic fauna limited to <i>Holothuria</i> and Actiniaria. <i>Lophelia</i> outcrops.	Deep-sea muddy sand A6.4	3	A6.4
Rockall Bank 2011 Tow 2	Tow2_4	Level seabed of bioturbated muddy sand with occasional scattered cobbles and small boulders. These sparse boulders and cobbles supporting bright white growths thought to be sponges. Benthic fauna limited to <i>Holothuria</i> and Actiniaria. <i>Lophelia</i> outcrops.	Deep-sea muddy sand A6.4	3	A6.4
Rockall Bank 2011 Tow 2	Tow2_5	Level seabed of bioturbated muddy sand with occasional scattered cobbles & small boulders. Sparse boulders and cobbles supporting bright white sponges. Fish frequent other fauna limited to <i>Holothuria</i> and Actiniaria. Single <i>Lophelia</i> outcrop.	Deep-sea muddy sand A6.4	3	A6.4
Rockall Bank 2011 Tow 2	Tow2_6	Level seabed of bioturbated muddy sand with occasional scattered cobbles & small boulders. Sparse boulders and cobbles supporting bright white sponges. Fish frequent other fauna limited to <i>Holothuria</i> and Actiniaria. Single <i>Lophelia</i> outcrop.	Deep-sea muddy sand A6.4	3	A6.4
Rockall Bank 2011 Tow 2	Tow2_7	Level seabed of bioturbated muddy sand with very occasional scattered cobbles and small boulders. Fish frequent other fauna limited to <i>Holothuria</i> and Actiniaria.	Deep-sea muddy sand A6.4	3	A6.4
Rockall Bank 2011 Tow 2	Tow2_8	Level seabed of bioturbated muddy sand with half a dozen small boulders. Fish abundant other fauna limited to <i>Holothuria</i> and Actiniaria.	Deep-sea muddy sand A6.4	3	A6.4
Rockall Bank	Tow2_9	Level seabed of bioturbated muddy sand with half a dozen	Deep-sea muddy sand A6.4	3	A6.4

Station/Tow	Video Sample	Habitat Description	EUNIS Habitat Name	EUNIS Level	EUNIS Code
2011 Tow 2		small boulders. Fish abundant other fauna limited to <i>Holothuria</i> and Actiniaria.			
Rockall Bank 2011 Tow 2	Tow2_10	Level seabed of bioturbated muddy sand with half a dozen small boulders. Fish abundant other fauna limited to <i>Holothuria</i> and Actiniaria.	Deep-sea muddy sand A6.4	3	A6.4
Rockall Bank 2011 Tow 2	Tow2_11	Level seabed of bioturbated muddy sand with a patch of cobbles and small boulders. Fish abundant other fauna limited to <i>Holothuria</i> and Actiniaria.	Deep-sea muddy sand A6.4	3	A6.4
Rockall Bank 2011 Tow 2	Tow2_12	Level seabed of bioturbated muddy sand with a dozen small boulders. Fish abundant other fauna limited to <i>Holothuria</i> .	Deep-sea muddy sand A6.4	3	A6.4
Rockall Bank 2011 Tow 3	Tow3_1	Bioturbated muddy sediment with limited visible fauna - <i>Holothuria</i> predominates. No data available accurately to assess the nature of the sediment. Plumes stirred up by escaping fish suggest muddy sediments.	Deep-sea muddy sand A6.4	3	A6.4
Rockall Bank 2011 Tow 3	Tow3_2	Bedrock, boulders and cobbles with sediment between in places forming a sequence of rocky reef with areas of thin sediment veneer over the rock. Fauna very limited.	Deep sea rock A6.1 comprising Deep sea bedrock A6.11 & Boulders on the deep sea bed A6.14	4	A6.11 & A6.14
Rockall Bank 2011 Tow 3	Tow3_3	No data camera too high above seabed.	No data	No Data	No Data
Rockall Bank 2011 Tow 3	Tow3_4	Bedrock, boulders and cobbles with sediment between in places forming a sequence of rocky reef separated by areas of thin sediment veneer over the rock. Fauna very limited.	Deep sea rock A6.1 comprising Deep sea bedrock A6.11 & Boulders on the deep sea bed A6.14	4	A6.11 & A6.14
Rockall Bank 2011 Tow 3	Tow3_5	Bioturbated muddy sediment with limited visible fauna - <i>Holothuria</i> predominates. No data available accurately to assess the nature of the sediment. Plumes stirred up by escaping fish suggest muddy sediments.	Deep-sea muddy sand A6.4	3	A6.4
Rockall Bank 2011 Tow 3	Tow3_6	Areas of bioturbated, muddy sediment with outcrops of bedrock virtually devoid of epifauna.	Mosaic of Deep-sea muddy sand A6.4 & Deep sea rock A6.1, comprising Deep sea bedrock A6.11	3 & 4	A6.4 & A6.11
Rockall Bank 2011 Tow 3	Tow3_7	Bioturbated muddy sediment with limited visible fauna - <i>Holothuria</i> predominates. No data available accurately to assess the nature of the sediment. Plumes stirred up by escaping fish suggest muddy sediments.	Deep-sea muddy sand A6.4	3	A6.4

Station/Tow	Video Sample	Habitat Description	EUNIS Habitat Name	EUNIS Level	EUNIS Code
Rockall Bank 2011 Tow 3	Tow3_8	A sequence of areas of bioturbated sediment with outcrops of small boulders and cobbles with epifauna with white sponges very prominent.	Mosaic of Deep sea rock A6.1, comprising Boulders on the deep sea bed A6.14; & Deep-sea muddy sand A6.4.	4 & 3	A6.14 & A6.4
Rockall Bank 2011 Tow 3	Tow3_9	A sequence of areas of bioturbated sediment with outcrops of small boulders and cobbles with epifauna with white sponges very prominent.	Mosaic of Deep sea rock A6.1, comprising Boulders on the deep sea bed A6.14; & Deep-sea muddy sand A6.4.	4 & 3	A6.14 & A6.4
Rockall Bank 2011 Tow 3	Tow3_10	A sequence of areas of bioturbated sediment with outcrops of small boulders and cobbles with epifauna with white sponges very prominent.	Mosaic of Deep sea rock A6.1, comprising Boulders on the deep sea bed A6.14; & Deep-sea muddy sand A6.4.	4 & 3	A6.14 & A6.4
Rockall Bank 2011 Tow 3	Tow3_11	A sequence of areas of bioturbated sediment with occasional outcrops of small boulders and cobbles with epifauna with white sponges very prominent.	Mosaic of Deep sea rock A6.1, comprising Boulders on the deep sea bed A6.14; & Deep-sea muddy sand A6.4.	4 & 3	A6.14 & A6.4
Rockall Bank 2011 Tow 3	Tow3_12	A sequence of areas of bioturbated sediment with regular outcrops of small boulders and cobbles with epifauna with white sponges very prominent.	Mosaic of Deep sea rock A6.1, comprising Boulders on the deep sea bed A6.14; & Deep-sea muddy sand A6.4.	4 & 3	A6.14 & A6.4
Rockall Bank 2011 Tow 3	Tow3_13	No data camera too high above seabed.	No data	No Data	No Data
Rockall Bank 2011 Tow 3	Tow3_14	A sequence of areas of bioturbated sediment with regular outcrops of small boulders and cobbles with epifauna with white sponges very prominent. Very large boulders apparently lack epifauna.	Mosaic of Deep sea rock A6.1 comprising Boulders on the deep sea bed A6.14; & Deep-sea muddy sand A6.4.	4 & 3	A6.14 & A6.4
Rockall Bank 2011 Tow 3	Tow3_15	A sequence of areas of bioturbated sediment with regular outcrops of small boulders and cobbles with epifauna with white sponges very prominent.	Mosaic of Deep sea rock A6.1 comprising Boulders on the deep sea bed A6.14; & Deep-sea muddy sand	4 & 3	A6.14 & A6.4

Station/Tow	Video Sample	Habitat Description	EUNIS Habitat Name	EUNIS Level	EUNIS Code
			A6.4.		
Rockall Bank 2011 Tow 3	Tow3_16	A sequence of areas of bioturbated sediment with regular outcrops of small boulders and cobbles with epifauna with white sponges very prominent.	Mosaic of Deep sea rock A6.1 comprising Boulders on the deep sea bed A6.14; & Deep-sea muddy sand A6.4.	4 & 3	A6.14 & A6.4
Rockall Bank 2011 Tow 3	Tow3_17	A mosaic of short sequences of boulders and cobbles covered by a veneer of soft sediment, areas of boulder/cobble reef, bedrock outcrops, mega-ripples of coarser sediment.	Mosaic of Deep sea rock A6.1 comprising Boulders on the deep sea bed A6.14; & Deep-sea muddy sand A6.4.	4 & 3	A6.14 & A6.4
Rockall Bank 2011 Tow 3	Tow3_18	A mosaic of short sequences of boulder/cobble reef, bioturbated soft sediment and small areas of mega-ripples made up of coarser sediment.	Mosaic of Deep sea rock A6.1 comprising Boulders on the deep sea bed A6.14; & Deep-sea muddy sand A6.4.	4 & 3	A6.14 & A6.4
Rockall Bank 2011 Tow 3	Tow3_19	A mosaic of short sequences of boulder/cobble reef, bioturbated soft sediment.	Mosaic of Deep sea rock A6.1 comprising Boulders on the deep sea bed A6.14; & Deep-sea muddy sand A6.4.	4 & 3	A6.14 & A6.4
Rockall Bank 2011 Tow 3	Tow3_20	A mosaic of short sequences of boulder/cobble reef, bedrock reef with very limited epifauna, bioturbated soft sediment, boulders and cobbles with sediment veneer, and areas of mega-ripples made up of coarser sediment.	Mosaic of Deep sea rock A6.1 comprising Boulders on the deep sea bed A6.14; & Deep-sea muddy sand A6.4.	4 & 3	A6.14 & A6.4
Rockall Bank 2011 Tow 6	Tow6_1	Slightly silty rippled sediment veneer over hard substrate with occasional scattered pebbles, boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 6	Tow6_2	Slightly silty rippled sediment veneer over hard substrate with occasional scattered pebbles, boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 6	Tow6_3	Slightly silty rippled sediment veneer over hard substrate with occasional scattered pebbles, boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2

Station/Tow	Video Sample	Habitat Description	EUNIS Habitat Name	EUNIS Level	EUNIS Code
Rockall Bank 2011 Tow 6	Tow6_4	Slightly silty rippled sediment veneer over hard substrate with occasional scattered pebbles, boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 6	Tow6_5	Slightly silty rippled sediment veneer over hard substrate with scattered pebbles, boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 6	Tow6_6	Slightly silty rippled sediment veneer over hard substrate with scattered pebbles, boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 6	Tow6_7	Slightly silty rippled sediment veneer over hard substrate with scattered pebbles, boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 6	Tow6_8	Slightly silty rippled sediment veneer over hard substrate with scattered pebbles, and occasional boulders and cobbles. Occasional areas of mega ripples of coarser sediment. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 6	Tow6_9	Slightly silty rippled sediment veneer over hard substrate with scattered pebbles, and occasional boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 6	Tow6_10	Scattered boulder/cobble/pebble reef with sediment between. Fauna represented by sponges on rock.	Boulders on the deep-sea bed A6.14	4	A6.14
Rockall Bank 2011 Tow 6	Tow6_11	Slightly silty rippled sediment veneer over hard substrate with scattered pebbles, and occasional boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 6	Tow6_12	Slightly silty sediment veneer over hard substrate with dense scatters of pebbles in places, and frequent boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 6	Tow6_13	Slightly silty sediment veneer over hard substrate with dense scatters of pebbles in places, and occasional boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 6	Tow6_14	Slightly silty sediment veneer over hard substrate with dense scatters of pebbles in places, and occasional boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 6	Tow6_15	Slightly silty sediment veneer over hard substrate with scattered pebbles, and occasional boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2

Station/Tow	Video Sample	Habitat Description	EUNIS Habitat Name	EUNIS Level	EUNIS Code
Rockall Bank 2011 Tow 6	Tow6_16	Slightly silty sediment veneer over hard substrate with scattered pebbles, and occasional boulders and cobbles. Identifiable fauna restricted to echinoderms and fish.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 6	Tow6_17	Scattered boulder/cobble/pebble reef with sediment between. Fauna represented by sponges on rock.	Boulders on the deep-sea bed A6.14	4	A6.14
Rockall Bank 2011 Tow 6	Tow6_18	Densely packed boulders, cobbles and pebbles with sediment between as well as a sediment veneer. Does not qualify as reef since fauna not dependent on rock.	Boulders on the deep-sea bed A6.14	4	A6.14
Rockall Bank 2011 Tow 6	Tow6_19	Scattered boulders, cobbles and pebbles with sediment between as well as a sediment veneer.	Deep-sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 7	Tow7_1	Boulders and cobbles on sediment with epifauna evident, including possible <i>Lophelia</i> .	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_2	Sediment (possibly over rock) with scattered pebbles and cobbles. Visible fauna limited to Holothurians.	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_3	Boulders and cobbles on sediment with epifauna evident, including possible <i>Lophelia</i> .	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_4	Sediment (possibly over rock) with scattered pebbles and cobbles. Visible fauna limited to Holothurians.	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_5	Boulders and cobbles on sediment with epifauna evident, including possible <i>Lophelia</i> .	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_6	Sediment (possibly over rock) with scattered pebbles and cobbles. No visible fauna.	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_7	Boulders and cobbles on sediment with epifauna evident.	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_8	Sediment (possibly over rock) with scattered cobbles and small boulders. <i>Holothuria</i> .	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_9	Boulders and cobbles on rock and sediment. <i>Lophelia</i> present.	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_10	Sediment with scattered cobbles. <i>Holothuria</i> .	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_11	Boulders and cobbles on sediment. Gorgoniaceae present.	Deep-sea rock A6.1	3	A6.1
Rockall Bank	Tow7_12	Sediment with scattered boulders. <i>Holothuria</i> .	Deep-sea sand A6.3	3	A6.3

Station/Tow	Video Sample	Habitat Description	EUNIS Habitat Name	EUNIS Level	EUNIS Code
2011 Tow 7					
Rockall Bank 2011 Tow 7	Tow7_13	Boulders and cobbles on sediment and rock with gorgonians, sponges and <i>Lophelia</i> .	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_14	Sediment with scattered pebbles. <i>Holothuria</i> .	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_15	Boulders and cobbles on sediment. No visible fauna.	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_16	Sediment with scattered pebbles. <i>Holothuria</i> .	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_17	Boulders and cobbles on sediment. <i>Lophelia</i> .	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_18	Sediment with scattered pebbles. <i>Holothuria</i> .	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_19	Boulders and cobbles on sediment. <i>Lophelia</i> .	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_20	Sediment with scattered pebbles and cobbles. <i>Holothuria</i> and cidarids.	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_21	Possibly sediment covered bedrock with low ledges with scattered pebbles. No visible fauna.	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_22	Boulders and cobbles on sediment with sponges and <i>Lophelia</i> .	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_23	Sediment with scattered pebbles and cobbles. No visible fauna.	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_24	Boulders and cobbles on sediment with sponges and <i>Lophelia</i> .	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_25	Sediment possibly over rock with scattered pebbles. No visible fauna.	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_26	Cobbles and small and medium boulders with gorgonians.	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_27	Sediment with scattered pebbles. <i>Holothuria</i> .	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_28	Cobbles and small and medium boulders with gorgonians, sponges and <i>Lophelia</i> .	Deep-sea rock A6.1	3	A6.1

Station/Tow	Video Sample	Habitat Description	EUNIS Habitat Name	EUNIS Level	EUNIS Code
Rockall Bank 2011 Tow 7	Tow7_29	Sediment with scattered pebbles. No visible fauna.	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_30	Boulders and cobbles with epifaunal sponges.	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_31	Sediment with scattered pebbles. No visible fauna.	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_32	Boulders and cobbles with epifaunal sponges and gorgonians.	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_33	Possibly sediment covered bedrock with scattered pebbles.	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_34	Boulders and cobbles with epifaunal sponges and gorgonians and possible <i>Lophelia</i> .	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 7	Tow7_35	Sediment with scattered pebbles, possibly over rock.	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 7	Tow7_36	Boulders and cobbles on sediment with epifaunal sponges.	Deep-sea rock A6.1	3	A6.1
Rockall Bank 2011 Tow 8	Tow8_1	Level silty sediment with scattered pebbles (rarely up to 20% cover, more usual <1-5%) and mounds/burrows. Rare cobbles boulders. Discernible fauna dominated by echinoids. Fish abundant with a range of species. A number of skate (clip 1).	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 8	Tow8_2	Silty level sediment with occasional medium and small boulders. Epifauna evident, including <i>Lophelia</i> , sponges and gorgonians.	Deep sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 8	Tow8_3	Level silty sediment with scattered pebbles (rarely up to 20% cover, more usual <1-5%) and mounds/burrows. Rare cobbles and boulders. Discernible fauna dominated by echinoids. Fish abundant with a range of species.	Deep-sea sand A6.3	3	A6.3
Rockall Bank 2011 Tow 8	Tow8_4	Level silty sediment with a very few scattered small boulders and cobbles with pebbles up to 30% cover in drifts. Fewer fish and echinoids.	Deep sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 8	Tow8_5	Silty sediment with sparse boulders and cobbles with epifauna including <i>Lophelia</i> and white sponges. Very limited in extent.	Deep sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 8	Tow8_6	Level silty sediment with very few scattered pebbles and mounds/burrows. Discernible fauna dominated by echinoids. Fish occasional.	Deep-sea sand A6.3	3	A6.3

Station/Tow	Video Sample	Habitat Description	EUNIS Habitat Name	EUNIS Level	EUNIS Code
Rockall Bank 2011 Tow 9	Tow9_1	A veneer of silty sediment with up to 40% pebbles over bedrock with a series of low ledges. Small patches of thinner sediment with boulders evident. Epifauna sparse and unidentifiable.	Deep sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 9	Tow9_2	A veneer of silty sediment of variable thickness over low bedrock ledges. Occasional boulders. Very sparse, unidentifiable fauna on the cleaner, steeper rock surfaces. The only identifiable fauna black Echinoidea.	Deep sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 9	Tow9_3	A veneer of silty sediment of variable thickness over low bedrock ledges. Occasional bare boulders. The only identifiable fauna black Echinoidea.	Deep sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 9	Tow9_4	A veneer of silty sediment over suspected bedrock with a jumble of boulders protruding through the sediment. Boulders with epifauna including Porifera.	Mosaic of Deep-sea rock A6.1 & Boulders on the deep sea bed A6.14.	3 & 4	A6.1 & A6.14
Rockall Bank 2011 Tow 9	Tow9_5	A veneer of silty sediment with scattered pebbles of variable thickness over low bedrock ledges. The only identifiable fauna black Echinoidea.	Deep sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 9	Tow9_6	A veneer of silty sediment over suspected bedrock with a jumble of boulders protruding through the sediment. Boulders with epifauna including Porifera.	Mosaic of Deep-sea rock A6.1 & Boulders on the deep sea bed A6.14.	3 & 4	A6.1 & A6.14
Rockall Bank 2011 Tow 9	Tow9_7	A veneer of silty sediment with scattered pebbles of variable thickness over low bedrock ledges. The only identifiable fauna black Echinoidea.	Deep sea mixed substrata A6.2	3	A6.2
Rockall Bank 2011 Tow 9	Tow9_8	A veneer of silty sediment with scattered pebbles of variable thickness over low bedrock ledges. Regular outcrops of boulders with very limited identifiable epifauna. The only identifiable fauna black Echinoidea.	Mosaic of Deep sea mixed substrata A6.2 80% & Boulders on the deep sea bed A6.14 20%.	3 & 4	A6.2 & A6.14
Rockall Bank 2011 Tow 9	Tow9_9	Mosaic of short outcrops of boulder & bedrock reef (~10m wide, 10% cover) separated by stretches of bedrock with ledges with a veneer of silty sediment & a more or less dense scatter of pebbles (90% cover). Epifauna restricted to the reef outcrops.	Mosaic of Deep sea mixed substrata A6.2 90% & Boulders on the deep sea bed A6.14 8% & Deep sea bedrock A6.11 2%.	3 & 4	A6.2, A6.14 & A6.11
Rockall Bank 2011 Tow 9	Tow9_10	Outcrop of bedrock and boulder reef with silty sediment and scattered pebble veneer between. Sparse epifauna of Porifera and Antipatharia, small growths of broken <i>Lophelia pertusa</i> .	Mosaic of Boulders on the deep sea bed A6.14 40% & Deep sea bedrock A6.11 10% & Deep sea mixed	4 & 3	A6.14, A6.11 & A6.2

Station/Tow	Video Sample	Habitat Description	EUNIS Habitat Name	EUNIS Level	EUNIS Code
			substrata A6.2 50%.		
Rockall Bank 2011 Tow 9	Tow9_11	Mosaic of short outcrops of boulder & bedrock reef (~10m wide, 10% cover) separated by stretches of bedrock with ledges with a veneer of silty sediment & a more or less dense scatter of pebbles (90% cover). Epifauna restricted to the reef outcrops.	Mosaic of Deep sea mixed substrata A6.2 90% & Boulders on the deep sea bed A6.14 8% & Deep sea bedrock A6.11 2%.	3 & 4	A6.2, A6.14 & A6.11
Rockall Bank 2011 Tow 9	Tow9_12	Mosaic of short outcrops of boulder & bedrock reef (~10m wide, 10% cover) separated by stretches of bedrock with ledges with a veneer of silty sediment & a more or less dense scatter of pebbles (90% cover). Epifauna restricted to the reef outcrops.	Mosaic of Deep sea mixed substrata A6.2 90% & Boulders on the deep sea bed A6.14 8% & Deep sea bedrock A6.11 2%.	3 & 4	A6.2, A6.14 & A6.11
Rockall Bank 2011 Tow 9	Tow9_13	Mosaic of short outcrops of boulder & bedrock reef (~10m wide, 10% cover) separated by stretches of bedrock with ledges with a veneer of silty sediment & a more or less dense scatter of pebbles (90% cover). Epifauna restricted to the reef outcrops.	Mosaic of Deep sea mixed substrata A6.2 90% & Boulders on the deep sea bed A6.14 8% & Deep sea bedrock A6.11 2%.	3 & 4	A6.2, A6.14 & A6.11

3.3.2 Description of MPA search features present

Possible deep sponge aggregations were recorded in the following video samples:

Station	Sample	Lat	Long
Rockall Bank 2011 Tow 1	Tow1_2	57.62626	-13.6608
Rockall Bank 2011 Tow 1	Tow1_4	57.59321	-13.61052
Rockall Bank 2011 Tow 1	Tow1_6	57.57149	-13.61995
Rockall Bank 2011 Tow 3	Tow3_2	56.92901	-14.74164
Rockall Bank 2011 Tow 3	Tow3_8	56.90629	-14.75501
Rockall Bank 2011 Tow 3	Tow3_9	56.89539	-14.76921
Rockall Bank 2011 Tow 3	Tow3_10	56.88364	-14.79729
Rockall Bank 2011 Tow 3	Tow3_11	56.87145	-14.8263
Rockall Bank 2011 Tow 3	Tow3_12	56.86902	-14.83261
Rockall Bank 2011 Tow 3	Tow3_13	56.86222	-14.84986
Rockall Bank 2011 Tow 3	Tow3_14	56.85857	-14.8521
Rockall Bank 2011 Tow 3	Tow3_15	56.85324	-14.85379
Rockall Bank 2011 Tow 3	Tow3_16	56.8337	-14.85797
Rockall Bank 2011 Tow 3	Tow3_17	56.82343	-14.86104
Rockall Bank 2011 Tow 3	Tow3_18	56.81371	-14.86409
Rockall Bank 2011 Tow 3	Tow3_19	56.79407	-14.8686
Rockall Bank 2011 Tow 6	Tow6_10	57.07126	-13.25718
Rockall Bank 2011 Tow 6	Tow6_17	57.14264	-13.17217
Rockall Bank 2011 Tow 7	Tow7_1	57.83739	-13.15938
Rockall Bank 2011 Tow 7	Tow7_3	57.84079	-13.16317
Rockall Bank 2011 Tow 7	Tow7_5	57.84284	-13.16567
Rockall Bank 2011 Tow 7	Tow7_13	57.84685	-13.17024
Rockall Bank 2011 Tow 7	Tow7_17	57.84958	-13.17309
Rockall Bank 2011 Tow 7	Tow7_22	57.85234	-13.17635
Rockall Bank 2011 Tow 7	Tow7_24	57.853	-13.17711
Rockall Bank 2011 Tow 7	Tow7_28	57.85423	-13.17858
Rockall Bank 2011 Tow 7	Tow7_34	57.85643	-13.18124
Rockall Bank 2011 Tow 7	Tow7_36	57.85738	-13.18241
Rockall Bank 2011 Tow 9	Tow9_4	58.1269	-13.33905
Rockall Bank 2011 Tow 9	Tow9_6	58.12422	-13.33434
Rockall Bank 2011 Tow 9	Tow9_9	58.11454	-13.31658
Rockall Bank 2011 Tow 9	Tow9_10	58.1106	-13.30782
Rockall Bank 2011 Tow 9	Tow9_11	58.10917	-13.30482
Rockall Bank 2011 Tow 9	Tow9_12	58.10112	-13.29109
Rockall Bank 2011 Tow 9	Tow9_13	58.09826	-13.28586

Possible *Lophelia pertusa* reef (uncertain) was recorded in the following video samples:

Station	Sample	Lat	Long
Rockall Bank 2011 Tow 7	Tow7_1	57.83739	-13.15938
Rockall Bank 2011 Tow 7	Tow7_3	57.84079	-13.16317
Rockall Bank 2011 Tow 7	Tow7_5	57.84284	-13.16567
Rockall Bank 2011 Tow 7	Tow7_9	57.84515	-13.16833
Rockall Bank 2011 Tow 7	Tow7_13	57.84685	-13.17024
Rockall Bank 2011 Tow 7	Tow7_17	57.84958	-13.17309
Rockall Bank 2011 Tow 7	Tow7_19	57.85024	-13.17384
Rockall Bank 2011 Tow 7	Tow7_22	57.85234	-13.17635
Rockall Bank 2011 Tow 7	Tow7_24	57.853	-13.17711
Rockall Bank 2011 Tow 7	Tow7_28	57.85423	-13.17858

Rockall Bank 2011 Tow 7	Tow7_34	57.85643	-13.18124
Rockall Bank 2011 Tow 7	Tow7_36	57.85738	-13.18241
Rockall Bank 2011 Tow 9	Tow9_10	58.1106	-13.30782

Possible *burrowing megafauna* was recorded in the following video sample:

Station	Sample	Lat	Long
Rockall Bank 2011 Tow 8	Tow8_6	58.23405	-13.51104

3.3.3 Description of Annex 1 reef features present

Annex 1 Geogenic Reef

The Annex 1 geogenic (bedrock) reef habitat subtype was recorded in the following video samples:

Station	Sample	Lat	Long
Rockall Bank 2011 Tow 1	Tow1_1	57.64092	-13.68112
Rockall Bank 2011 Tow 1	Tow1_2	57.62626	-13.6608
Rockall Bank 2011 Tow 1	Tow1_3	57.60346	-13.60845
Rockall Bank 2011 Tow 1	Tow1_4	57.59321	-13.61052
Rockall Bank 2011 Tow 1	Tow1_6	57.57149	-13.61995
Rockall Bank 2011 Tow 9	Tow9_4	58.1269	-13.33905
Rockall Bank 2011 Tow 9	Tow9_6	58.12422	-13.33434
Rockall Bank 2011 Tow 9	Tow9_10	58.1106	-13.30782
Rockall Bank 2011 Tow 9	Tow9_12	58.10112	-13.29109
Rockall Bank 2011 Tow 9	Tow9_13	58.09826	-13.28586

Annex 1 Stony Reef

The Annex 1 stony reef habitat subtype was recorded in the following video samples:

Station	Sample	Lat	Long
Rockall Bank 2011 Tow 1	Tow1_1	57.64092	-13.68112
Rockall Bank 2011 Tow 1	Tow1_2	57.62626	-13.6608
Rockall Bank 2011 Tow 1	Tow1_3	57.60346	-13.60845
Rockall Bank 2011 Tow 1	Tow1_4	57.59321	-13.61052
Rockall Bank 2011 Tow 2	Tow2_1	57.27427	-14.69799
Rockall Bank 2011 Tow 2	Tow2_2	57.25375	-14.70841
Rockall Bank 2011 Tow 6	Tow6_10	57.07126	-13.25718
Rockall Bank 2011 Tow 6	Tow6_17	57.14264	-13.17217
Rockall Bank 2011 Tow 7	Tow7_1	57.83739	-13.15938
Rockall Bank 2011 Tow 7	Tow7_3	57.84079	-13.16317
Rockall Bank 2011 Tow 7	Tow7_5	57.84284	-13.16567
Rockall Bank 2011 Tow 7	Tow7_7	57.84421	-13.16727
Rockall Bank 2011 Tow 7	Tow7_9	57.84515	-13.16833
Rockall Bank 2011 Tow 7	Tow7_11	57.84627	-13.16961
Rockall Bank 2011 Tow 7	Tow7_13	57.84685	-13.17024
Rockall Bank 2011 Tow 7	Tow7_15	57.84886	-13.1723
Rockall Bank 2011 Tow 7	Tow7_17	57.84958	-13.17309
Rockall Bank 2011 Tow 7	Tow7_19	57.85024	-13.17384
Rockall Bank 2011 Tow 7	Tow7_22	57.85234	-13.17635
Rockall Bank 2011 Tow 7	Tow7_24	57.853	-13.17711

Station	Sample	Lat	Long
Rockall Bank 2011 Tow 7	Tow7_26	57.85366	-13.1779
Rockall Bank 2011 Tow 7	Tow7_28	57.85423	-13.17858
Rockall Bank 2011 Tow 7	Tow7_30	57.85528	-13.17984
Rockall Bank 2011 Tow 7	Tow7_32	57.85577	-13.18044
Rockall Bank 2011 Tow 7	Tow7_34	57.85643	-13.18124
Rockall Bank 2011 Tow 7	Tow7_36	57.85738	-13.18241

3.3.4 Species of conservation interest in the Rockall Survey area

Other than the search features already described in section 3.2.2 (deep sea sponge aggregations and *Lophelia* reef) the following species of conservation interest were identified during analysis of the Rockall video footage:

Species	Station	Sample
Rajidae indet (Skate)	Rockall Bank 2011 Tow 2	Tow2_1
Rajidae indet (Skate)	Rockall Bank 2011 Tow 2	Tow2_11
Rajidae indet (Skate)	Rockall Bank 2011 Tow 6	Tow6_1
Rajidae indet (Skate)	Rockall Bank 2011 Tow 6	Tow6_2
Rajidae indet (Skate)	Rockall Bank 2011 Tow 6	Tow6_3
Rajidae indet (Skate)	Rockall Bank 2011 Tow 6	Tow6_8
Rajidae indet (Skate)	Rockall Bank 2011 Tow 6	Tow6_13
Rajidae indet (Skate)	Rockall Bank 2011 Tow 6	Tow6_14

4 References

BLYTH-SKYRME V., LINDENBAUM C., VERLING E., VAN LANDEGHEM K., ROBINSON K., MACKIE A. & DARBYSHIRE T. 2008. Broad-scale biotope mapping of potential reefs in the Irish Sea (north-west of Anglesey), JNCC Report 423.

COMMISSION OF THE EUROPEAN COMMUNITY, 2007. The Interpretation Manual of European Union Habitats - EUR27 [online]. Brussels: European Commission DG Environment. Available from:
http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

IRVING, R. 2009. The identification of the main characteristics of stony reef habitats under the Habitats Directive. Summary report of an inter-agency workshop 26-27 March 2008. JNCC Report No. 432.

4.1 Websites

Url1: [http://www.blog.ensemblevideo.com/post/2011/01/How-to-Convert-DVD-\(VOB\)-Files-to-Editable-MPEGs.aspx](http://www.blog.ensemblevideo.com/post/2011/01/How-to-Convert-DVD-(VOB)-Files-to-Editable-MPEGs.aspx)

Url2: <http://www.jncc.defra.gov.uk/marine/biotopes/hierarchy.aspx>

Url3: <http://www.jncc.defra.gov.uk/default.aspx?page=1645>

Url4: <http://www.jncc.defra.gov.uk/page-3088>

Url5: <http://www.habitas.org.uk/marinelife/index.html?item=about>

Appendix 1 Video & Stills Analysis Recording Proforma

Video and stills analysis scoring/recording form used throughout this seabed imagery analysis contract. This form was printed for scoring video clips and kept digitally for stills analysis. All Marine Recorder v4 required and optional fields are included.

SURVEY NAME:	Survey Name	Survey Name	Survey Name
1.General (Whole tow)			
Event Name	Tow 1	Tow 1	Tow 1
Location			
Event Reference			
EventDate			
Projection			
AreaDerivedFrom			
Type (point / line)			
SWCorner/start (Lat/Long)			
NECorner/end (Lat/Long)			
Surveyor Names (all)			
Event Start Time			
Event End Time			
Event Start Depth			
Event End Depth			
Event Description (Brief: physical & biotic, # habitats in tow) Include any Annex 1 habitats and special species. Don't use abbreviations in MR data entry			
Video Quality			
Stills quality good enough for habitat y/n			
2.Sample Page (Each habitat split/still)			
Habitat Name (100 characters)			
Sample Ref	Sample 1.1	Sample 1.2	Sample 1.3
Method (stills or towed video)			
StartTime (hh:mm:ss)			
EndTime (hh:mm:ss)			
Duration (hh:mm:ss)			
Surveyor Name (Sample)			
Surveyor Name (MRDE)			
Sample Start position (Lat/Long)			
Sample End position (Lat/Long)			
Sample Description (Habitat, Depths, Characteristic Species, Features - Species of Interest (if no species state whether it was because resolution too poor or generally no species)			
Habitat type (Eunis level 3)			
1st JNCC Biotope Name			
1st JNCC Biotope Code			
2nd JNCC Biotope Name			
2nd JNCC Biotope Code			
Name of MPA search features			
Annex 1 Reef Presence			
Annex 1 Reef Type			

Species of Conservation Interest			
3.HabitatDetails			
SeaLevel Start			
SeaLevel End			
Depth Band			
BiologicalZone			
Inclination% (overhangs, vertical faces80-100, v steep faces40-80, upper faces0-40, under boulders)			
Modifiers (state if Hypersaline, WaveSurged, Sheltered, TidalCurrentsAccelerated, TidalCurrentsDecelerated, Shading, Grazing, Pollution)			
Substratum% (5%minimum except if something is just present but notable 1%)			
Bedrock			
Boulders			
Boulders_over1024mm			
Boulders_512to1024mm			
Boulders_256to512mm			
Cobbles_64to256mm			
Pebbles_16to64mm			
Shells_Empty			
Shells_LiveModiolus			
Gravel			
Gravel_Stone_4to16mm			
Gravel_Shell_4to16mm			
Gravel_DeadMaerl			
Gravel_LiveMaerl			
Sand			
Sand_Coarse_1to4mm			
Sand_Medium_0_25to1mm			
Sand_Fine_0_063to0_25mm			
Mud_lessthan0_063mm			
Artificial			
ArtificialMetal			
ArtificialConcrete			
ArtificialWood			
Trees_branches			
Algae			
Peat			
RockFeatures_1to5			
SurfaceRelief_Even_Rugged			
Texture_Smooth_Pitted			
Stability_Stable_Mobile			
Scour_None_Scoured			
Silt_None_Silted			
FissuresOver10mm_None_Many			
CrevisesUnder10mm_None_Many			
BoulderCobblePebbleShape_Rounded_Angular			
Rockpools_None_All			
RockFeatures (State if present [Gully, Cave, Tunnel, Rockmill, BoulderCobbleOnRock, BoulderCobbleOnSediment, BoulderHoles, SedimentOnRock])			

SedimentFeatures_1to5			
SurfaceRelief_Even_Uneven			
Firmness_Firm_Soft			
Stability_Stable_Mobile			
Sorting_Well_Poor			
BlackLayer			
SedimentFeatures (State if any present [MoundsCasts, BurrowsHoles, Tubes, AlgalMat, WavesDunes, Ripples, StandingWater, DrainageChannelsCreeks, PSA])			
COMMENTS on sample			
4.Species			
SurveyMethod			
SurveyMethodComment			
ReplicateRef			
NumDeployments			
RecordQuality			
SpeciesDataType			
Determiner			
Area of View/Survey			
5. Taxa: Provide Species Name in column A and the following as applicable: Qualifier (e.g. Lifeform, colour, burrows etc), uncertain Y-Res/Y-ID/N, Characterising Sp y/n, SACFOR, Count			
Taxa 1			
Taxa 2			
Taxa 3			
Taxa 4			
Taxa 5			
Taxa 6			
Taxa 7			

Appendix 2 Scottish MPA Project Search Features

Details of Scottish MPA project search features used to underpin the selection of Nature Conservation MPAs in Scottish offshore waters.

Information relating to features came from a variety of web resources including:

<http://jncc.defra.gov.uk/page-1584>; [http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/marine-protected-areas-\(mpa\)](http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/marine-protected-areas-(mpa)) & <http://www.marlin.ac.uk>

Seabed habitats being used to underpin the selection of Nature Conservation MPAs in Offshore waters	
Burrowed mud (Territorial & Offshore Waters)	
Seapens and burrowing megafauna in circalittoral fine mud - SS.SMu.CFiMu.SpMg	Extensively distributed throughout the sea lochs of the west coast, Hebrides and voes of Shetland it occurs at depths of between 10-100m. It supports a diverse burrowing fauna and in particular various seapens in the deeper, sheltered areas. The majority of the UK records are from Scotland. Plains of fine mud at depths greater than about 15m may be heavily bioturbated by burrowing megafauna; burrows and mounds may form a prominent feature of the sediment surface with conspicuous populations of seapens, typically <i>Virgularia mirabilis</i> and <i>Pennatula phosphorea</i> . The burrowing crustacea present typically include <i>Nephrops norvegicus</i> , which is frequently recorded from surface observations although grab sampling may fail to sample this species. Indeed, some forms of sampling may also fail to indicate seapens as characterising species. This biotope also seems to occur in deep offshore waters in the North Sea, where densities of <i>Nephrops norvegicus</i> may reach 68 per 10m ² (see Dyer <i>et al</i> 1982, 1983), and the Irish Sea. The burrowing anemone <i>Cerianthus lloydii</i> and the ubiquitous epibenthic scavengers <i>Asterias rubens</i> , <i>Pagurus bernhardus</i> and <i>Liocarcinus depurator</i> are present in low numbers in this biotope whilst the brittlestars <i>Ophiura albida</i> and <i>Ophiura ophiura</i> are sometimes present, but are much more common in slightly coarser sediments. Low numbers of the anemone <i>Pachycerianthus multiplicatus</i> may also be found, and this species, which is scarce in the UK, appears to be restricted to this habitat (Plaza & Sanderson 1997). The infauna may contain significant populations of the polychaetes <i>Pholoe</i> spp., <i>Glycera</i> spp., <i>Nephtys</i> spp., spionids, <i>Pectinaria belgica</i> and <i>Terebellides stroemi</i> , the bivalves <i>Nucula sulcata</i> , <i>Corbula gibba</i> and <i>Thyasira flexuosa</i> , and the echinoderm <i>Brissoopsis lyrifera</i> .
Burrowing megafauna and <i>Maxmuelleria lankesteri</i> in circalittoral mud - SS.SMu.CFiMu.MegMax	In circalittoral stable mud distinctive populations of megafauna may be found. These typically include <i>Nephrops norvegicus</i> , <i>Calocaris macandreae</i> and <i>Callianassa subterranea</i> . Large mounds formed by the echinuran <i>Maxmuelleria lankesteri</i> are also frequent in this biotope. The seapen <i>Virgularia mirabilis</i> may occur occasionally in this biotope but not in the same abundance as SpMg to which MegMax is closely allied. Infaunal species may include <i>Nephtys hystricis</i> , <i>Chaetozone setosa</i> , <i>Amphiura chiajei</i> and <i>Abra alba</i> .
Tall seapen <i>Funiculina quadrangularis</i>	Found in muddy substrata on sheltered coasts, especially in sea lochs. Sublittoral to deep

	<p>offshore water. A tall, narrow sea pen, which can exceed 2 metres in height. It has a calcareous white axis, square in section. The polyps are irregularly arranged along the axis or tend to form oblique rows. They are white or pale pink in colour.</p> <p>Found in deep sheltered waters up to 200m depth it has also been recorded from as shallow as 20m in some sea lochs. In the UK it is almost entirely restricted to western Scotland and the Hebrides; Scottish populations are considered of global importance.</p>
Fireworks anemone <i>Pachycerianthus multiplicatus</i>	<p>This large burrowing sea anemone is similar to <i>Cerianthus lloydii</i> but much larger. The length of the column and span of the tentacles is up to 300mm and the column is much stouter than in the common <i>Cerianthus lloydii</i>. The colour of the inner tentacles is pale buff or chestnut, marginal tentacles whitish with fine brown bands, or plain white. There are up to 200 very long marginal tentacles.</p>
Mud burrowing amphipod <i>Maera loveni</i>	<p>This amphipod lives in burrows in muds in depths of 20-400m. It is a northern cold water species that has reached its southern limit in Scotland where it is sparsely distributed around the coast. Ninety-five percent of British records are from sea lochs and the northern North Sea.</p>
Carbonate mound communities	<p>These are typically steep-sided mounds that may be up to 350m high, formed from the debris of cold water coral reefs occurring at depths of between 500 and 1100m. They support a diverse community comprising echinurans, sponges, bryozoans, soft corals, ascidians, tube worms, crinoids and bivalve molluscs. They are known to occur on the Hatton Bank in the far west of Scottish waters but have a wider distribution in the north-east Atlantic such as the Porcupine Bank and the Rockall Trough.</p>
Coral gardens	<p>These are highly diverse habitats comprising dense aggregations of corals which may reach densities of between 100 and 700 colonies per 100m². Coral gardens can occur on both soft and hard substrate. They favour areas where there is a moderate to strong current and include solitary hard corals, sea pens, bamboo coral, gorgonians, hydro-corals and black coral. The associated fauna is also biodiverse comprising basket stars, brittlestars, featherstars, molluscs, crustaceans and various fish species. At present in Scottish waters they are known principally from the Anton Dohrn sea mount but further surveys are likely to discover new locations.</p>
Deep sea sponge aggregations	<p>Deep sea sponge aggregations are found on both hard and soft substrates at depths of between 250 and 1300m; ancient iceberg plough marks are an ideal habitat as the stable boulders and cobbles provide numerous attachment points for the sponges. They are composed principally of glass sponges and the giant sponges (<i>Desmospongia</i>). The spicules from dead sponges that cover the seabed inhibit the colonisation of the sediments by burrowing animals but the sponges provide an ideal attachment point for brittlestars lifting them above the sea bed where they can catch passing food particles. At present these aggregations are known from the Faroe-Shetland channel at around 500m deep and also occur in the Porcupine Seabight in the north-west Atlantic.</p>
Northern sea fan and sponge communities (Territorial & Offshore Waters)	
Deep sponge communities (circalittoral). CR.HCR.DpSp (component is Offshore waters only)	<p>This biotope complex typically occurs on deep (commonly below 30m depth), wave-exposed circalittoral rock subject to negligible tidal streams. The sponge component of this biotope is the most striking feature, with similar species to the bryozoan and erect sponge biotope</p>

	<p>complex (BrErSp) although in this case, the sponges <i>Phakellia ventilabrum</i>, <i>Axinella infundibuliformis</i>, <i>Axinella dissimilis</i> and <i>Stelligera stuposa</i> dominate. Other sponge species frequently found on exposed rocky coasts are also present in low to moderate abundance. These include <i>Cliona celata</i>, <i>Polymastia boletiformis</i>, <i>Haliclona viscosa</i>, <i>Pachymatisma johnstonia</i>, <i>Dysidea fragilis</i>, <i>Suberites carnosus</i>, <i>Stelligera rigida</i>, <i>Hemimycale columella</i> and <i>Tethya aurantium</i>. The cup coral <i>Caryophyllia smithii</i> and the anemone <i>Corynactis viridis</i> may be locally abundant in some areas, along with the holothurian <i>Holothuria forskali</i>. The soft corals <i>Alcyonium digitatum</i> and <i>Alcyonium glomeratum</i> are frequently observed. The bryozoans <i>Pentapora foliacea</i> and <i>Porella compressa</i> are also more frequently found in this deep-water biotope complex. Bryozoan crusts such as <i>Parasmittina trispinosa</i> are also occasionally recorded. Isolated clumps of large hydroids such as <i>Nemertesia antennina</i>, <i>Nemertesia ramosa</i> and <i>Sertularella gayi</i> may be seen on the tops of boulders and rocky outcrops. Large echinoderms such as <i>Echinus esculentus</i>, <i>Luidia ciliaris</i>, <i>Marthasterias glacialis</i>, <i>Strichastrella rosea</i>, <i>Henricia oculata</i> and <i>Aslia lefevrei</i> may also be present. The sea fan <i>Eunicella verucosa</i> may be locally common but to a lesser extent than in ByErSp.Eun. The top shell <i>Calliostoma zizyphinum</i> is often recorded as present.</p>
Northern sea fan <i>Swiftia pallid</i> (Territorial & Offshore Waters)	<p>Found on rocks and boulders from depths of 15-60m, most frequently below 20m. Also recorded on coarse pebbles lying in coarse shell sand with silt. May occur at depths of 2380m (see additional information). A small sea fan which forms slender colonies with little branching. Up to 20cm tall but usually 7-10cm. Branches are irregularly orientated. Colour white or greyish, sometimes with a pinkish tinge.</p>
Offshore deep sea muds	
<p><i>Ampharete falcata</i> turf with <i>Parvicardium ovale</i> on cohesive muddy sediment near margins of deep stratified seas. SS.SMu.OMu.AfalPova</p>	<p>Dense stands of <i>Ampharete falcata</i> tubes which protrude from muddy sediments, appearing as a turf or meadow in localised areas. These areas seem to occur on a crucial point on a depositional gradient between areas of tide-swept mobile sands and quiescent stratifying muds. Dense populations of the small bivalve <i>Parvicardium ovale</i> occur in the superficial sediment. Other infauna in this diverse biotope includes <i>Lumbrineris scopa</i>, <i>Levinsenia</i> sp., <i>Prionospio steenstrupi</i>, <i>Diplocirrus glaucus</i> and <i>Praxillella affinis</i> although a wide variety of other infaunal species may also be found. Both the brittlestars <i>Amphiura filiformis</i> and <i>Amphiura chiajei</i> may be present together with <i>Nephrops norvegicus</i> in higher abundance than the BlyrAchi or AfilEcor biotopes. Substantial populations of mobile epifauna such as <i>Pandalus montagui</i> and smaller fish also occur, together with those that can cling to the tubes, such as <i>Macropodia</i> spp. A similar turf of worm tubes formed by the maldanid polychaete <i>Melinna cristata</i> has been recorded from Northumberland (Buchanan 1963). <i>Nephrops</i> trawling may severely damage this biotope and it is possible that such activity has destroyed examples of this biotope in the Irish Sea (E.I.S. Rees pers. comm. 2002).</p>
<p>Foraminiferans and <i>Thyasira</i> sp. in deep circalittoral fine mud. SS.SMu.OMu.ForThy</p>	<p>In deep water and soft muds of Boreal and Arctic areas, a community dominated by foraminiferans and the bivalve <i>Thyasira</i> sp. (e.g. <i>T. croulinensis</i> and <i>T. pygmaea</i>) may occur (Thorson 1957; Knitzer <i>et al</i> 1992). Foraminiferans such as <i>Saccammina</i>, <i>Psammosphaera</i>, <i>Haplophragmoides</i>, <i>Crithionina</i> and <i>Astorhiza</i> are important components of this community with dead tests numbering thousands per m² (see</p>

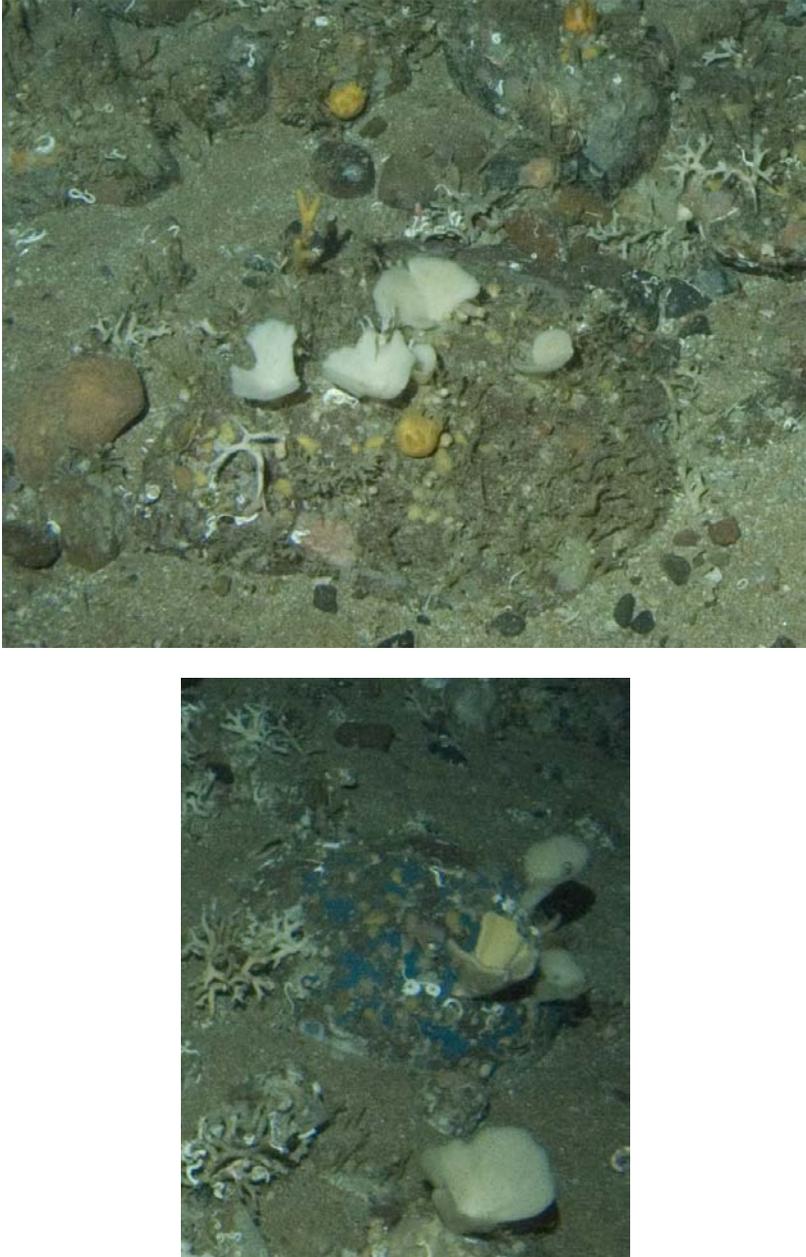
	<p>Stephen 1923; McIntyre 1961) and sometimes visible from benthic photography (Mackie, Oliver & Rees 1995). It is likely that a community dominated by <i>Astorhiza</i> in fine sands in the Irish Sea may be another distinct biotope (E.I.S. Rees pers. comm. 2002). Polychaetes, e.g. <i>Paraonis gracilis</i>, <i>Myriochele heeri</i>, <i>Spiophanes kroyeri</i>, <i>Tharyx</i> sp., <i>Lumbrineris tetraura</i>, are also important components of this biotope. These communities appear to have no equivalent on the continental plateau further south (Glemarec 1973) but are known from the edge of the Celtic Deep in the Irish Sea (Mackie, Oliver & Rees 1995). The benthos in these offshore areas has been shown to be principally Foraminifera and similar, rich communities may exist in Scottish sealochs (McIntyre 1961). Communities from yet deeper (northern) waters at the extremes of the North Sea may be reminiscent, although dissimilar to ForThy (see Pearson <i>et al</i> 1996) reflecting a higher proportion of silt/clay. A fully Arctic version of this biotope has also been described (Thorson 1934, 1957) although it should be noted that Jones (1950) considered this Boreal foraminiferan community to be part of a 'Boreal Deep Mud Association'.</p>
<p><i>Levinsenia gracilis</i> and <i>Heteromastus filiformis</i> in offshore circalittoral mud and sandy mud. SS.SMu.OMu.LevHet</p>	<p>In deep offshore mud and sandy mud a community characterised by the polychaetes <i>Levinsenia gracilis</i> and <i>Heteromastus filiformis</i> may occur. Other important taxa may include <i>Paramphinome jeffreysii</i>, <i>Nephtys hystricis</i> and <i>N. incisa</i>, <i>Spiophanes kroyeri</i>, <i>Orbinia norvegica</i>, <i>Terebellides stroemi</i>, <i>Thyasira gouldi</i> and <i>T. equalis</i>. Burrowing megafauna such as <i>Calocaris macandreae</i> may also be found in this biotope. This biotope has been found in the central and northern North Sea. A similar community, dominated by <i>L. gracilis</i> but accompanied by <i>Glycera</i> spp. (particularly <i>Glycera rouxii</i>) and <i>Monticellina dorsobranchialis</i>, has also been reported from the Irish Sea. This Irish community also contains <i>Calocaris macandreae</i>, <i>Mediomastus fragilis</i>, <i>Tubificoides amplivasatus</i>, <i>Nephtys incisa</i>, <i>Ancistrosyllis groenlandica</i>, <i>Nucula sulcata</i>, <i>Litocorsa stremma</i> and <i>Minuspio</i> sp. and it is not known at present whether this represents a separate biotope or whether it is a geographic variant of a wider <i>Levinsenia</i> biotope. Situation: This biotope has been found in the central and northern North Sea and may also occur in the Irish Sea</p>
<p><i>Paramphinome jeffreysii</i>, <i>Thyasira</i> spp. and <i>Amphiura filiformis</i> in offshore circalittoral sandy mud. SS.SMu.OMu.PjefThyAfil</p>	<p>Deep, offshore cohesive sandy mud communities characterised by the polychaete <i>Paramphinome jeffreysii</i>, bivalves such as <i>Thyasira equalis</i> and <i>T. gouldi</i> and the brittlestar <i>Amphiura filiformis</i>. Other taxa may include <i>Laonice cirrata</i>, the sea cucumber <i>Labidoplax buski</i> and the polychaetes <i>Goniada maculata</i>, <i>Spiophanes kroyeri</i> and <i>Aricidea catherinae</i>. <i>Amphiura chiajei</i> may be occasional in this biotope as may <i>Philine scabra</i>, <i>Levinsenia gracilis</i> and <i>Pholoe inornata</i>. This biotope along with SMU.ThyNten, SMU.AfilMysAnit, SMU.AfilNten and SSA.OfusAfil, may comprise the <i>Amphiura</i> dominated components of the 'off-shore muddy sand association' (Jones 1951; Mackie 1990) and the infralittoral etage described by Glemarec (1973).</p>
<p><i>Myrtea spinifera</i> and polychaetes in offshore circalittoral sandy mud. SS.SMu.OMu.MyrrPo</p>	<p>Deep, offshore habitats with cohesive sandy mud (>20% mud) may support communities characterised by infaunal polychaetes and the bivalve <i>Myrtea spinifera</i>. Polychaetes typically include <i>Chaetozone setosa</i>, <i>Paramphinome jeffreysii</i>, <i>Levinsenia gracilis</i>, <i>Aricidea catherinae</i> and <i>Prionospio malmgreni</i>. The bivalves <i>Thyasira</i> spp. and <i>Abra nitida</i> may also be found as may seapens, such as <i>Pennatula phosphorea</i>. Some examples of the biotope AfilNten contain <i>Myrtea spinifera</i> (Mackie 1990) in lower numbers but these habitats are generally</p>

	sandier than those in MyrPo. Situation: This biotope has been recorded in the northern North Sea but may also exist in the Irish Sea.
Offshore subtidal sands and gravels	
<i>Glyceria lapidum</i> , <i>Thyasira</i> spp. and <i>Amythasides macroglossus</i> in offshore gravelly sand. SS.SCS.OCS.GlapThyAmy	Offshore (deep) circalittoral habitats with coarse sands and gravel, stone or shell and occasionally a little silt (<5%) may be characterised by the polychaetes <i>Glyceria lapidum</i> and <i>Amythasides macroglossus</i> with the bivalve <i>Thyasira</i> spp. (particularly <i>T. succisa</i>). Other taxa include polychaetes such as <i>Exogone verugera</i> , <i>Notomastus latericeus</i> , <i>Spiophanes kroyeri</i> , <i>Aphelochaeta marioni</i> (<i>Tharyx marioni</i>) and <i>Lumbrineris gracilis</i> and occasional numbers of the bivalve <i>Timoclea ovata</i> . This biotope bears some resemblance to the shallow SCS.Glap and also to the circalittoral and offshore venerid biotopes (SCS.MedLumVen and SMX.PoVen) but differs by the range of polychaete and bivalve fauna present. This biotope is notable for the presence of the rarely recorded ampharetid polychaete <i>Amythasides macroglossus</i> and also for the small ear file clam <i>Limatula subauriculata</i> which is common in some examples of this biotope.
<i>Hesionura elongata</i> and <i>Protodorvillea kefersteini</i> in offshore coarse sand. SS.SCS.OCS.HeloPkef	Offshore (deep) circalittoral habitats with coarse sand may support populations of the interstitial polychaete <i>Hesionura elongata</i> with <i>Protodorvillea kefersteini</i> . Other notable species include the phyllodocid polychaete <i>Protomystides limbata</i> and the bivalve <i>Moerella pygmaea</i> . This biotope was reported in the offshore northern North Sea by Eleftheriou and Basford (1989). Relatively little data exists for this biotope.
<i>Echinocyamus pusillus</i> , <i>Ophelia borealis</i> and <i>Abra prismatica</i> in circalittoral fine sand. SS.SSa.CFiSa.EpusOborApri	Circalittoral and offshore medium to fine sand (from 40m to 140m) characterised by the sea urchin <i>Echinocyamus pusillus</i> , the polychaete <i>Ophelia borealis</i> and the bivalve <i>Abra prismatica</i> . Other species may include the polychaetes <i>Spiophanes bombyx</i> , <i>Pholoe</i> sp., <i>Exogone</i> spp., <i>Sphaerosyllis bulbosa</i> , <i>Goniada maculata</i> , <i>Chaetozone setosa</i> , <i>Owenia fusiformis</i> , <i>Glyceria lapidum</i> , <i>Lumbrineris latreilli</i> and <i>Aricidea cerrutii</i> and the bivalves <i>Thracia phaseolina</i> and <i>Moerella pygmaea</i> and to a lesser extent <i>Spisula elliptica</i> and <i>Timoclea ovata</i> . This biotope has been found in the central and northern North Sea.
<i>Abra prismatica</i> , <i>Bathyporeia elegans</i> and polychaetes in circalittoral fine sand. SS.SSa.CFiSa.ApriBatPo	In circalittoral and offshore medium to fine sands between 25m and 100m a community characterised by the bivalve <i>Abra prismatica</i> , the amphipod <i>Bathyporeia elegans</i> and polychaetes such as <i>Scoloplos armiger</i> , <i>Spiophanes bombyx</i> , <i>Aonides paucibranchiata</i> , <i>Chaetozone setosa</i> , <i>Ophelia borealis</i> and <i>Nephtys longosetosa</i> may be found. Crustacea such as the cumacean <i>Eudorellopsis deformis</i> and the opheliid polychaetes such as <i>Ophelia borealis</i> , <i>Travisia forbesii</i> or <i>Ophelina neglecta</i> are often present in this biotope and the brittlestar <i>Amphiura filiformis</i> may also be common at some sites. This biotope has been reported in the central and northern North Sea (Basford & Eleftheriou 1989; Knitzer <i>et al</i> 1992).
Maldanid polychaetes and <i>Eudorellopsis deformis</i> in offshore circalittoral sand or muddy sand. SS.SSa.OSa.MalEdef	In deep offshore sand or non-cohesive muddy sand dense populations of maldanid polychaetes such as <i>Maldane sarsi</i> and the cumacean <i>Eudorellopsis deformis</i> may be found. Accompanying these species are abundant ophiuroids including <i>Amphiura filiformis</i> , polychaetes such as Terebellidae sp., <i>Chaetozone setosa</i> , <i>Levinsenia gracilis</i> , <i>Scoloplos armiger</i> , the amphipod <i>Harpinia antennaria</i> and the bivalves <i>Nuculoma tenuis</i> and <i>Parvicardium minimum</i> . This biotope is similar to the <i>Maldane sarsi</i> - <i>Ophiura sarsi</i> community defined by Glemarec (1973).

<p><i>Owenia fusiformis</i> and <i>Amphiura filiformis</i> in offshore circalittoral sand or muddy sand. SS.SSa.OSa.OfusAfil</p>	<p>Areas of slightly muddy sand (generally <20% mud) in offshore waters may be characterised by high numbers of the tube building polychaete <i>Owenia fusiformis</i> often with the brittlestar <i>Amphiura filiformis</i>. Whilst <i>O. fusiformis</i> is also found in other circalittoral or offshore biotopes it usually occurs in lower abundances than in SSA.OfusAfil. Other species found in this community are the polychaetes <i>Goniada maculata</i>, <i>Pholoe inornata</i>, <i>Diplocirrus glaucus</i>, <i>Chaetozone setosa</i> and <i>Spiophanes kroyeri</i> with occasional bivalves such as <i>Timoclea ovata</i> and <i>Thyasira equalis</i>. The sea cucumber <i>Labidoplax buski</i> and the cumacean <i>Eudorella truncatula</i> are also commonly often found in this biotope.</p>
<p>Seamount communities</p>	
<p>Low or limited mobility species being used to underpin the selection of Nature Conservation MPAs in Offshore waters</p>	
<p>Northern feather star aggregations on mixed substrata - <i>Leptometra celtica</i> (Territorial & Offshore Waters)</p>	<p>Commonly found on sediment, shell, gravel or bedrock from 40 to 200m depth, it can on occasions form very dense aggregations on the sea bed. The majority of records from the UK are from the west and north coasts of Scotland and Shetland. See above for photo.</p>
<p>Fan mussel aggregations - <i>Atrina fragilis</i> (Territorial & Offshore Waters)</p>	<p>Lives embedded in lower intertidal and sub-tidal muds, sandy muds or gravels. Large (30-48 cm long) triangular, thin, shell tapering to a point, light yellow-brown to dark brown in colour. Fan-mussels live with their pointed end embedded in sediment, attached by abundant fine abyssal threads. The posterior (broad) end protrudes from the surface. Often solitary but populations occur as small groups or patches of individuals forming small beds.</p>
<p>Ocean quahog aggregations - <i>Arctica islandica</i> (Territorial & Offshore Waters)</p>	<p><i>Arctica islandica</i> is found at extreme low water level but predominately on sub-littoral firm sediments including level offshore areas, buried (or part buried) in sand and muddy sand that ranges from fine to coarse grains. <i>Arctica islandica</i> has a heavy, thick, oval to rounded shell up to 13cm in length. The shell is sculptured with numerous fine concentric lines and the beaks are anterior. It has a thick glossy periostracum that is brown in smaller individuals, becoming greenish-brown to black in larger specimens. The periostracum peels away on dead shells, revealing a white to pale brown shell beneath.</p>
<p>Mobile species being used to underpin the selection of Nature Conservation MPAs in Offshore waters</p>	
<p>Blue ling - <i>Molva dypterygia</i></p>	<p>The blue ling is a demersal species usually found on the continental slopes at depths between 300-500m, often on muddy bottoms. <i>Molva dypterygia</i> is a member of the cod-like family. It has a very elongate slender body, up to 1.5 m in length, and a small and narrow head. It has two dorsal fins, the first of which is short, the second is long and runs continuously from the beginning of the tail fin to two thirds of the body length. The anal fin is also long and continuous but shorter than the dorsal fin. The tail fin is concave to rounded in shape. The upper body is grey-brown in colour, grading to white underneath.</p>
<p>Orange roughy - <i>Hoplostethus atlanticus</i></p>	<p>The orange roughy is a bathypelagic species, inhabiting deep, cold waters over steep continental slopes from 150m to over 1800m depth. The orange roughy <i>Hoplostethus atlanticus</i> is a member of the slimehead family. It has a deep and compressed body that may reach up to 75cm in length. It has a large head with an oblique mouth and large eyes. Its dorsal fin is moderately long and has spines at the anterior end. Its tail is slender and forked with spines on each lobe. A median ridge of scutes is present on the abdomen. Alive, it is bright brick red in colour but fades to a yellowish orange after death.</p>

<p>Sandeels - <i>Ammodytes</i> (Territorial & Offshore Waters)</p>	<p><i>Ammodytes marinus</i> is a schooling benthic-pelagic species, which may congregate in large schools near the surface or bury itself in sand. It may be found both inshore and offshore.</p> <p><i>Ammodytes marinus</i> is a thin and elongated sand eel with a pointed jaw. It can reach a maximum length of 25cm. Its dorsal colouring is usually dark green, while the ventral and lateral sides are silvery in colour. There is a single long dorsal fin, and the anal fin is half the length of the dorsal fin. The tail fin is small and distinctively forked. The lower jaw is distinctly longer than the upper jaw.</p> <p><i>Ammodytes tobianus</i> is found from mid-tide level over sandy shores to the shallow sublittoral to depths of 30 metres. They bury themselves 20-50cm deep in the sand during the winter.</p> <p><i>Ammodytes tobianus</i> is the most abundant species of sand eel found in British waters. It has been reported to spawn in spring and summer (Dipper 2001) or spring and autumn (FishBase 2000). Eggs are laid in the sand where they adhere to the sand grains. Each female produces 4000-20,000 eggs, which hatch after a few weeks. Their diet consists of zooplankton and some large diatoms as well as worms, small crustaceans and small fish. They swim in schools with heads down and dart into the sand immediately on sign of danger.</p>
<p>Annex I Reef Habitats.</p> <p>Reefs can be either biogenic concretions or of geogenic origin. They are hard compact substrata on solid and soft bottoms, which arise from the sea floor in the sublittoral and littoral zone. Reefs may support a zonation of benthic communities of algae and animal species as well as concretions and corallogenic concretions.</p> <ul style="list-style-type: none"> • Arise from the sea floor means: the reef is topographically distinct from the surrounding seafloor. <p>Such hard substrata that are covered by a thin and mobile veneer of sediment are classed as reefs if the associated biota are dependent on the hard substratum rather than the overlying sediment.</p> <p>Hard compact substrata are: rocks (including soft rock, e.g. chalk), boulders and cobbles (generally >64mm in diameter)</p> <p>Biogenic concretions are defined as: concretions, encrustations, corallogenic concretions and bivalve mussel beds originating from dead or living animals, i.e. biogenic hard bottoms which supply habitats for epibiotic species.</p> <p>Geogenic reefs are formed by non biogenic substrata.</p> <p>A variety of subtidal topographic features are included in this habitat complex such as: Hydrothermal vent habitats, sea mounts, vertical rock walls, horizontal ledges, overhangs, pinnacles, gullies, ridges, sloping or flat bed rock, broken rock and boulder and cobble fields.</p>	

Appendix 3 Examples of Proposed New Biotopes

Proposed Biotope (based on existing JNCC marine habitat classification code)	Suggested Title Example images and Description
<p>CR.HCR.DpSp.PhaAxi(sp arse)</p>	<p>Sparse sponges and branching bryozoans on moderate energy circalittoral rock</p>  <p>This biotope typically occurs on the upper faces of deep (100-200m depth) circalittoral rock. The sponge component of this biotope is the main feature, with similar species to the sponge biotope complex (CR.HCR.DpSp.PhaAxi) although in this case, the sponges may be relatively sparse. The dominant species may include <i>Phakellia ventilabrum</i> aff., <i>Axinella infundibuliformis</i> aff., and branching bryozoans. No infaunal records.</p>

Proposed Biotope (based on existing JNCC marine habitat classification code)	Suggested Title Example images and Description
CR.HCR.XFa(sparse)	<p data-bbox="584 333 1418 394"> Mixed sparse faunal turf communities on high energy circalittoral rock </p>  <p data-bbox="568 1021 1434 1111"> This biotope complex occurs on circalittoral bedrock and boulders it is similar to the biotope CR.HCR.Xfa, however the species is very sparse and impoverished in comparison to this. No Infaunal record. </p>
CR.MCR(spirorbids & bryozoan crust)	<p data-bbox="584 1173 1418 1234"> Spirorbids and bryozoan crusts on moderate energy circalittoral rock </p>  <p data-bbox="568 1812 1434 2016"> This habitat complex mainly occurs on exposed to moderately wave-exposed circalittoral bedrock and boulders, and occasionally on more mixed substrata featuring cobble and sand, subject to moderately strong to weak tidal streams. This biotope is similar to that described by A4.2_UK02 without the branching bryozoans and is therefore dominated by spirorbids and bryozoan crusts and this is indicative of an even higher energy or less stable environment. No infaunal record. </p>

Proposed Biotope (based on existing JNCC marine habitat classification code)	Suggested Title Example images and Description
CR.MCR(spirorbids, spiky bryozoan & bryozoan crust)	<p data-bbox="576 338 1428 398"> Spirorbids and branching bryozoans and encrusting bryozoans on moderate energy circalittoral rock </p> <div data-bbox="671 398 1334 920">  </div> <div data-bbox="671 954 1334 1395">  </div> <p data-bbox="568 1424 1436 1666"> This habitat complex mainly occurs on exposed to moderately wave-exposed circalittoral bedrock and boulders, and occasionally on more mixed substrata featuring cobble and sand, subject to moderately strong to weak tidal streams. This biotope is similar to that described by A4.12_UK01 without the sponge community and is therefore dominated by spirorbids and branching bryozoans and bryozoan crusts and this is indicative of perhaps a higher energy and less stable environment. No infaunal record. </p>

Proposed Biotope (based on existing JNCC marine habitat classification code)	Suggested Title Example images and Description
CR.MCR.EcCr.FaAlCr.Bri (no algae)	<p data-bbox="571 331 1433 398"> Faunal crusts on exposed to moderately wave-exposed circalittoral rock </p> <div data-bbox="600 427 1401 1021">  </div> <div data-bbox="600 1055 1401 1648">  </div> <p data-bbox="571 1682 1433 1749"> A biotope similar to CR.MCR.EcCr.FaAlCr.Bri but has no algae due to the depths at which it is found. </p>

Proposed Biotope (based on existing JNCC marine habitat classification code)	Suggested Title Example images and Description
<p>SS.SMx.CMx.FluHyd(sparse & lacks FlustraSecuriflustra)</p>	<p><i>Hydrallmania falcata</i> on tide-swept circalittoral mixed sediment</p>  <p>This biotope suggested here is similar to SS.SMx.CMx.FluHyd, however it lacks the distinguishing species of <i>Flustra folicea</i> and/or <i>Securiflustra securifrons</i>. No Infaunal record.</p> <p>Important note: In collating images for this biotope it was realised that only 5 records of SS.SMx.CMx.FluHyd(sparse & lacks FlustraSecuriflustra) were assigned in the early stages of video analysis.</p> <p>In hindsight, it is possible that SS.SMx.CMx.FluHyd(sparse & lacks FlustraSecuriflustra) is more well fitted to the new suggested biotope:</p> <p>CR.MCR (spirorbids, spiky bryozoan & bryozoan crust)</p> <p>Further work re-visiting the video would be required to confirm this.</p>

Proposed Biotope (based on existing JNCC marine habitat classification code)	Suggested Title Example images and Description
SS.SMx.CMx.FluHyd(sparse)	<p data-bbox="595 338 1407 398"> Sparse/impooverished <i>Flustra foliacea</i> & <i>Hydrallmania falcata</i> on tide-swept circalittoral mixed sediment </p>  <p data-bbox="568 1061 1434 1122"> This biotope suggested here is similar to SS.SMx.CMx.FluHyd, however it is a sparse/impooverished version. No Infaunal record. </p>