



**Cyfoeth
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Wales**

Findings of drop down video and stills imagery from an area of drumlins off northwest Anglesey, July 2019.



Report No: 401

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1 Crynodeb Gweithredol

Mae gwybodaeth am wasgariad a maint cynefinoedd gwely'r môr yn nyfroedd Cymru yn dameidiog tu hwnt ac mewn rhai ardaloedd ychydig iawn o wybodaeth sydd ar gael ynglŷn â pha gynefinoedd a allai fod yn bresennol. Aeth Cyfoeth Naturiol Cymru (CNC) ati i gynnal yr arolwg presennol gyda'r bwriad o gael data o ardal o wely'r môr o ddrymlinâu tanddwr mewn dŵr 40-65m o ddyfnder dan lefel y môr, 5km i 20km oddi ar arfordir gogledd orllewin Ynys Môn. Mae canlyniadau'r arolwg yn rhoi gwell dealltwriaeth o strwythur gwely'r môr a'r cymunedau biolegol ar safleoedd yr arolwg.

Gollyngwyd system gamera manylder uwch o gwch arolygu Mersey Guardian mewn naw lleoliad i gyd ar draws ardal yr arolwg ym mis Gorffennaf 2019. Roedd y pellterau llusgo dan sylw rhwng 400m-700m o hyd a chafwyd mwy na dwy awr o fideo i gyd a mwy na 990 o ddelweddau llonydd y gellid eu defnyddio.

Roedd y gwaith o ddadansoddi'r delweddau fideo a lluniau llonydd yn dilyn canllawiau a gymeradwywyd yn fewnol ac yn genedlaethol. Adolygwyd delweddau pob pellter llusgo a nodwyd y ffiniau rhwng cynefinoedd (biotopau) neu rwydweithiau o gynefinoedd. Yna cofnodwyd y rhywogaethau a'r swbstrad ym mhob cynefin (ardal pellter llusgo), a neilltuwyd biotopau gan ddefnyddio Dosbarthiad Cynefinoedd Morol Prydain ac Iwerddon y Cydbwyllgor Cadwraeth Natur.

Cofnodwyd yr holl ddata yn 'Marine Recorder' sy'n cadw cronfa ddata samplau biolegol morol CNC.

Cofnodwyd mwy na 860 o rywogaethau ac uwch grwpiau ar draws yr wyth cynefin gwahanol (biotopau) a ganfuwyd. Roedd y cymunedau mwyaf amrywiol a ddominyddwyd gan hydroidau a bryosoaid i'w cael ar waddodion cymysg siltiog a atgyfnerthwyd gan gramen o diwbiau llyngyr dreiniog (*Sabellaria spinulosa*). Ni nodwyd unrhyw ardaloedd sylweddol o riff llyngyr dreiniog, er bod strwythurau gwasgaredig tebyg i riffiau isel mewn un orsaf arolygu.

Nid oedd unrhyw effeithiau o waith dyn yn amlwg yn lleoliadau'r arolwg a dim ond eitemau bach o sbwriel (gwydr a phlastig) a welwyd. Ni nodwyd unrhyw rywogaethau goresgynnol estron (INNS).

2 Executive summary

Knowledge of the distribution and extent of seabed habitats in Welsh waters is extremely patchy and in some areas little information is available as to which habitats may be present. Natural Resources Wales (NRW) undertook the present survey with the aim of obtaining data from an area of seabed of submerged drumlins in water depths of 40-65m below sea level, 5km to 20km off the north west coast of Anglesey. The results of the survey provide a better understanding of the seabed structure and biological communities at the survey sites.

A high definition drop-down camera system was deployed from the survey vessel Mersey Guardian at total of nine locations across the survey area in July 2019. Tows were between 400m-700m in length and in total over two hours of video and more than 990 usable still images were obtained.

The analysis of the video and stills imagery followed in-house and nationally approved guidelines. Images from each tow were reviewed and the boundaries between habitats (biotopes) or habitat complexes noted. The species and substratum in each habitat (tow section) were then recorded, and biotopes assigned using the Marine Habitat Classification for Britain and Ireland of the Joint Nature Conservation Committee.

All data were entered into Marine Recorder which holds NRW's marine biological sample database.

Over 860 records of species and higher groups were made across the eight different habitats (biotopes) recognised. The most diverse communities dominated by sea fans (hydroids) and moss animals (bryozoa) occurred on silty, mixed sediments consolidated by a crust of ross worm (*Sabellaria spinulosa*) tubes. No substantial areas of ross worm reef were noted, although there were scattered, low reef-like structures at one survey station.

No man-made impacts were evident at the survey locations and only small items of litter (glass and plastic) were seen. No non-native invasive species (INNS) were noted.

3 Introduction

Knowledge of the distribution and extent of seabed habitats in Welsh waters is extremely patchy and in some areas little information is available as to which habitats may be present. In order to increase our knowledge and evidence base Natural Resources Wales (NRW) is using boat time that is available under a joint Environment Agency / NRW working agreement to groundtruth areas of conservation interest previously identified from multibeam imagery, by collecting video and still images to confirm the presence of habitats or species of conservation importance. The data will also allow NRW to gain a better understanding of the seabed structure and biological communities at the survey sites.

The principal objective of the contract was to carry out a taxonomic analysis of video and still images from a drop video survey undertaken off north west Anglesey in July 2019 Figure 1. Marine Ecological Solutions Ltd (Marine EcoSol) was contracted to undertake the analysis, data entry and reporting of the survey. Following this analysis, biotopes were assigned in accordance with the UK Marine Habitat Classification for Britain and Ireland (JNCC, 2015). In addition, data were entered into Marine Recorder (NRW's marine biological sample database). This report provides a brief summary of the findings of the analytical work.

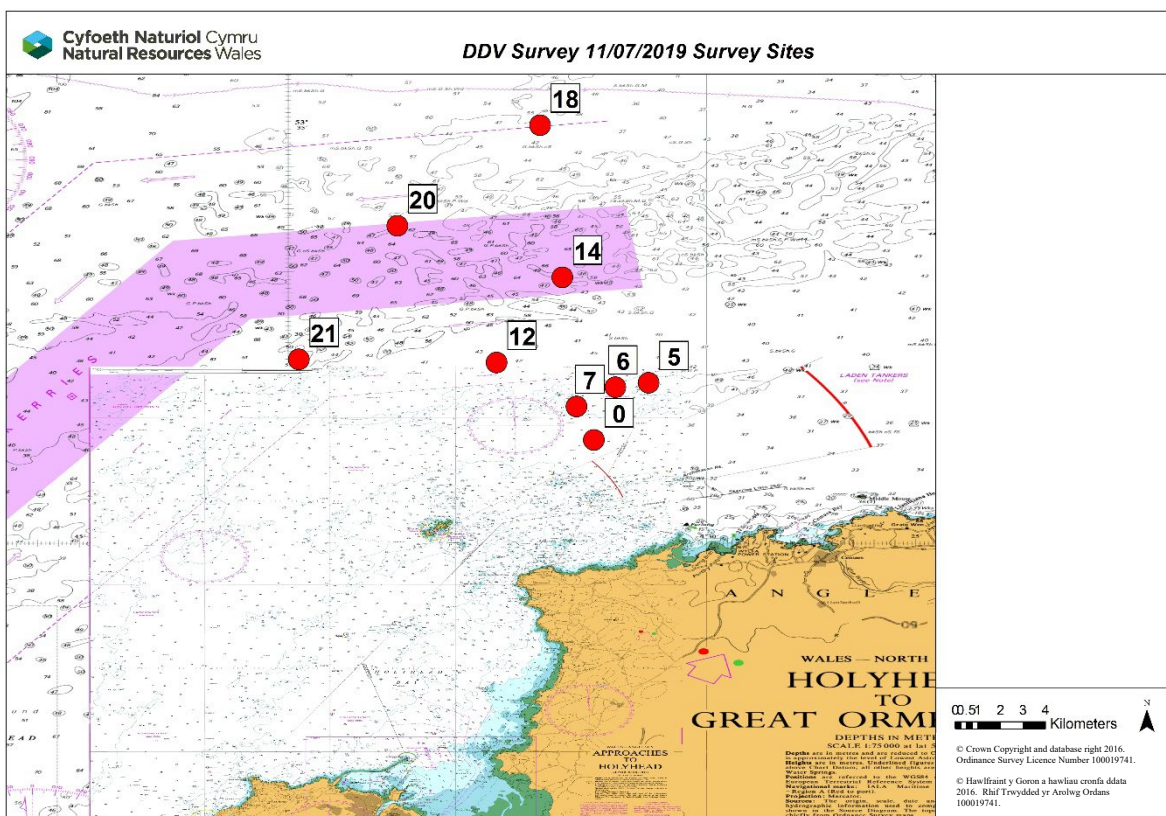


Figure 1 Location of survey sites off the north west coast of Anglesey

4 Methodology

4.1 Data collection – video and still imagery

A drop-down camera system was deployed from the survey vessel *Mersey Guardian* using a high definition digital camera at a total of nine locations situated between 5km and 20km off the north west coast of Anglesey in an area of drumlin fields (Figure 1). Individual tows ranged from 319m to 864m in length most being between 500m and 700m. Over two hours of video footage were collected together with 998 usable still images. The survey took place on 11th July 2019.

During the survey, the vessel's position was logged every five seconds and after the survey, points relating to each individual video tow line and still image were extracted from this position log using the recorded times and locations for the start and end of each line.

Start and end points for each habitat of each tow are provided in Appendix 2. together with details of towing speed, length of tow, number of usable stills and an assessment of image quality. Position and depth at each habitat split were derived from the video overlay which differed slightly from equivalent positions and depths recorded in the vessel's autofix log.

Tow speeds ranged from 0.2knots up to 2.6knots, the faster speeds resulting in poor quality video imagery. Operational guidance for underwater imagery recommends a speed over ground of 0.3-0.5knots (Coggan *et al.*, 2007; Tillin *et al.*, 2018). In general stills image quality was good.

4.2 Image analysis and data entry – video and stills imagery

The analysis of the video and stills imagery followed guidelines provided by NRW, Marine EcoSol's in-house standard operating procedures, and JNCC/NMBAQC recommendations (Turner *et al.*, 2016). A point by point summary of imagery analysis methods is provided in Appendix 1.

The video camera showed a swath of seabed approximately 0.3m wide when on the seabed, while still images showed an area estimated as about 0.13m². All images were reviewed using appropriate high-quality imaging equipment capable of playing and displaying full HD video at 1920p x 1080p resolution. All video was provided in Advanced Systems Format (.asf).

The entire video and set of stills from each tow were reviewed prior to detailed assessment and recording, and the boundaries between biotopes or biotope complexes noted by recording the time and positional coordinates at which major changes in seabed and habitat type occurred. The species and substratum in each habitat '*sample*' (tow section) was then recorded, and biotopes assigned (as per analysis methods in Appendix 1).

Discrete habitat tow sections or ‘*samples*’ as defined above were determined using a combination of video and stills images. The lower quality video imagery was then linked to the ‘*sample*’ in terms of data recording using the time stamp on the video playback. Higher quality stills images were used to identify and quantify substrates and taxa, with abundances pooled to assess the abundance of the taxa over each sample.

All data were entered into Marine Recorder v5.7 under the Marine Recorder survey name ‘2019 Draft NRW Northwest Anglesey Drumlin Survey’. Each tow was a survey event, each habitat section a ‘*sample*’. Individual stills images were used to assess samples, but not individually entered into Marine Recorder (to avoid pseudo-replication within the data set).

Depths of each habitat section were corrected to approximate depth below chart datum using tidal predictions derived from Admiralty Total Tide v16 at the time of the start of each tow at each station. Predictions used were for Cemaes Bay.

5 Results

The nine DDV tows were found to comprise 14 different habitats ‘sections’ (Marine Recorder samples) that were classified to one of eight marine habitat classification codes in water depths of 43-65m bsl. A total of more than 860 taxon records were made with numbers of taxa per habitat ranging from 33 to 97, with the exception of Station 07 H1 which hosted a single taxon (sand eels: Ammodytidae) in very mobile sand. Communities were dominated by hydroids and bryozoa on mixed sediment and stony reef while those with a consolidating crust of *Sabellaria spinulosa* tubes were the most diverse, with biotope mosaics showing the highest diversity as would be expected.

One to three habitats were recorded along each sampling tow comprising eight different biotopes over the whole survey; example imagery for each biotope is provided in Appendix 4. Biotopes were generally sedimentary in nature with the high energy ‘rock’ biotopes (stations 5, 7, 20 and 21) being composed of low stony reef of boulders and cobbles. Fauna was dominated by turf forming taxa of hydroids and bryozoa.

Sabellaria spinulosa generally occurred as a crust over boulders and cobbles providing a consolidated substrate supporting a relatively diverse epibenthic community compared with adjacent very mobile coarse sediments. No substantial areas of *Sabellaria spinulosa* reef were recorded with sparsely scattered, low reef-like structures (<5-10cm elevation) only present at Stations 05, 06 and 21. After the very broad, high level biotope category of “*Circalittoral Coarse Sediment*” (SS.SCS.CCS) the most widely occurring biotope was “*Flustra foliacea and Hydrallmania falcata on tide-swept circalittoral mixed sediment*” (SS.SMx.CMx.FluHyd) occurring at four of the 14 habitat sections (samples).

The only Annex 1 habitat identified was medium quality biogenic reef (*S. spinulosa*) at Station 05 H1 (cover 5%), and low quality *S. spinulosa* reef at Stations 06 H1 and 21

H1 (probably not of Annex 1 quality, as cover was <1%). Sand eels (Ammodytidae) were the only Welsh Section 7 taxon recorded and these occurred in very low numbers. No Section 7 habitats were present.

No invasive non-native species were recorded over the survey.

Very little litter was observed with only small fragments of broken glass, plastic and electrical cable reported in addition to a length of cable. No other anthropogenic impacts were observed.

Summary details for each tow are provided in Appendix 2, biotope information summarised in Appendix 3, with images of each biotope type shown in Appendix 4.

6 Discussion

The results of the analysis of towed drop imagery off the north west coast of Anglesey showed that seabed habitats in the area comprised highly mobile coarse sediments of sands and gravel adjacent to slightly silty, mixed sediments of cobbles, pebbles and gravel as well as scoured bedrock and boulders, both frequently supporting a crust of ross worm tubes (*Sabellaria spinulosa*). The epibenthic fauna on mixed sediments and rock was moderately diverse and in addition to ross worm tubes was dominated by turf forming species of bryozoa and hydroids, in some cases with small solitary tunicates beneath.

No anthropogenic impacts were noted apart from a few small items of litter (plastic, glass). No invasive non-native species were recorded and no substantial areas of ross worm (*S. spinulosa*) biogenic reef observed.

7 References

Coggan, R., Clements, A., White, J. and Golding, N. 2007. *Recommended operating guidelines (ROG) for underwater video and photographic imaging techniques*. 32pp. https://webarchive.nationalarchives.gov.uk/20101014084849/http://www.searchmesh.net/PDF/GMHM3_Video_ROG.pdf

JNCC (2015) The Marine Habitat Classification for Britain and Ireland Version 15.03. [Accessed 11/01/2019]. Available from: <https://mhc.jncc.gov.uk/>

Tillin, H.M., Luff, A., Graham, G., Wadsworth, T., Baldock, L. and van Rein, H. 2018. *Remotely Operated Vehicles for use in marine benthic monitoring. Marine Monitoring Platform Guidelines No.1*, Joint Nature Conservation Committee, Peterborough, 28pp. http://jncc.defra.gov.uk/pdf/JNCC-MMPG_No1_ROV_WEB.pdf

Turner, J.A., Hitchin, R., Verling, E. and Van Rein, H. 2016. *Epibiota remote monitoring from digital imagery: Interpretation guidelines*, pp. 49, NMBAQC & JNCC, Peterborough. http://www.nmbaqcs.org/media/1591/epibiota_operational_guidelines_final.pdf

8 Appendices

1. Image analysis procedures

Image analysis (stills and video) followed these steps:

1. Brief review of image for quality and suitability in relation to the analytical methods to be used. Any image deemed not to be of sufficient quality was not analysed.
2. The initial viewing of the still images divided the tow into sections considered to represent different seabed habitat types. Habitat types covering less than 25m² were considered as incidental patches in a habitat mosaic. Each set of still images and the associated video section represented the data for one sample.
3. Analyse imagery:
 - a. For each image set (stills and associated video) the quality was categorised as good/moderate/poor.
 - b. Habitats were described in one sentence for each section (sample) of stills and associated video.
 - c. Epibenthic taxa were identified to the to the lowest taxonomic level possible and counted or their percentage cover estimated (colonial/encrusting epibenthic species). All taxa were enumerated per section of stills and associated video, before conversion to SACFOR using Marine Nature Conservation Review (MNCR) guidelines (<http://jncc.defra.gov.uk/page-2684>).
 - d. Taxonomic nomenclature followed the European Register of Marine Species (<http://www.marbef.org/data/erms.php>).
 - e. Substrate composition was estimated as per MNCR categories (Connor et al., 2004).
 - f. As part of the review the presence of *Sabellaria spinulosa* was to be recorded.
 - g. The presence of litter was noted.
 - h. The occurrence of invasive non-native species (INNS) was reviewed.
 - i. Where identification of taxa was uncertain, a note was made and comments provided, stating the reason for the uncertainty (e.g. blurred image, partially concealed from view, cannot be identified by image alone).
4. Biotopes were assigned to the highest resolution possible using the JNCC (2015) on-line Marine Habitat Classification v15.03 with the aim of matching biotopes at level four or five of the classification hierarchy (<http://jncc.defra.gov.uk/marine/biotopes/hierarchy.aspx>).

5. A final check was then made that all above information had been recorded and was correct for each sample.

The original video and stills data can be requested from NRW quoting metadata number NRW_DS125640.

2. Drop Down tow details

Start and end points of habitats in each tow together with details of towing speed, length of tow, number of usable stills and an assessment of image quality.

Sample reference	V.St_00_H1	V.St_05_H1	V.St_06_H1	V.St_06_H2
Sample Start position (Lat/Long)	53 27.4683 -004 33.0580	53 28.8467 -004 31.1485	53 28.7521 -004 31.9148	53 28.763 -004 32.105
Sample End position (Lat/Long)	53 27.4392 -004 33.5031	53 28.8199 -004 31.5915	53 28.763 -004 32.105	53 28.754 -004 32.486
Length of video tow (m)	494	491	204	420
Water depth Start (BSL) (m)	43	64	57	56
Water depth End (BSL)(m)	43	54	56	57
Tow speed kts	1.7-2.6	1.3-2.2	1.4-1.8	0.7-1.9
Number of usable stills	69	82	34	61
Image quality - stills	Adequate for species	Adequate for species, scale too small for habitat	Adequate for habitat and species	Adequate for habitat and species
Image quality - video	Very poor	Poor for both species and habitat	Poor for both habitat and species.	Poor for both habitat and species.

Sample reference	V.St_07_H1	V.St_07_H2	V.St_12_H1	V.St_14_H1
Sample Start position (Lat/Long)	53 28.1047 -004 33.3101	53 28.1912 -004 33.4285	53 29.3317 -004 34.7628	53 31.4098 -004 33.2219
Sample End position (Lat/Long)	53 28.1912 -004 33.4285	53 28.1001 -004 33.4814	53 29.2831 -004 35.2279	53 31.5102 -004 33.6612
Length of video tow (m)	207	179	521	519
Water depth Start (BSL) (m)	56	56	49	65
Water depth End (BSL)(m)	56	53	47	61
Tow speed kts	1.8-2.3	1.8-2.0	1.1-1.6	0.6-1.2
Number of usable stills	32	7	111	164
Image quality - stills	Adequate for species	Adequate for species	Adequate for habitat and species	Good for habitat and species
Image quality - video	Very poor for habitat	Very poor for habitat	Poor for both species & habitat.	Poor for species, adequate for habitat.

Sample reference	V.St_18_H1	V.St_18_H2	V.St_18_H3	V.St_20_H1
Sample Start position (Lat/Long)	53 34.9207 -004 33.7370	53 34.9568 -004 33.7416	53 34.9812 -004 33.7452	53 32.576 -004 37.623
Sample End position (Lat/Long)	53 34.9568 -004 33.7416	53 34.9812 -004 33.7452	53 35.054 -004 33.710	53 32.600 -004 37.305
Length of video tow (m)	67	45	142	567
Water depth Start (BSL) (m)	50	51	51	58
Water depth End (BSL)(m)	51	51	51	57
Tow speed kts	0.2-0.7	0.2-0.6	0.2-0.8	0.7-1.8
Number of usable stills	49	32	105	83
Image quality - stills	Good for species and habitat	Good for species and habitat	Good for species and habitat	Good for species and habitat
Image quality - video	Adequate for habitat.	Poor for habitat.	Poor for habitat.	Poor for habitat.

Sample reference	V.St_20_H2	V.St_21_H1
Sample Start position (Lat/Long)	53 32.600 -004 37.305	53 29.3687 -004 39.8126
Sample End position (Lat/Long)	53 32.695 -004 37.249	53 29.627 -004 39.380
Length of video tow (m)	190	536
Water depth Start (BSL) (m)	57	56
Water depth End (BSL)(m)	56	55
Tow speed kts	0.6-1.5	1.2-2.3
Number of usable stills	63	106
Image quality - stills	Good for species and habitat	Good for species and habitat
Image quality - video	Poor for habitat.	Poor for habitat.

All positions in WGS84 datum.

3. Drop Down tow details

Some samples were allocated a mosaic of more than one biotope, indicated where number of taxa are shared between two biotopes.

Station	Sample	No of taxa	Biotope Code	Biotope Description	Notes
Station 00	V.St_00_H1	31	SS.SCS.CCS	Circolittoral coarse sediment	
Station 05	V.St_05_H1	69	CR.MCR.CSab.Sspi.ByB	Sabellaria spinulosa with a bryozoan turf and barnacles on silty turbid circolittoral rock	Note there were 69 taxa between this biotope and SS.SBR.PoR.SspiMx.
Station 05	V.St_05_H1	69	SS.SBR.PoR.SspiMx	Sabellaria spinulosa on stable circolittoral mixed sediment	Note there were 69 taxa between this biotope and CR.MCR.CSab.Sspi.ByB
Station 06	V.St_06_H1	31	SS.SCS.CCS	Circolittoral coarse sediment	
Station 06	V.St_06_H2	67	SS.SBR.PoR.SspiMx	Sabellaria spinulosa on stable circolittoral mixed sediment	
Station 07	V.St_07_H1	1	SS.SCS.CCS	Circolittoral coarse sediment	
Station 07	V.St_07_H2	28	CR.MCR.EcCr.FaAlCr.Flu	Flustra foliacea on slightly scoured silty circolittoral rock	
Station 12	V.St_12_H1	71	SS.SMx.CMx.FluHyd	Flustra foliacea and Hydrallmania falcata on tide-swept circolittoral mixed sediment	
Station 14	V.St_14_H1	71	SS.SMx.CMx.FluHyd	Flustra foliacea and Hydrallmania falcata on tide-swept circolittoral mixed sediment	
Station 18	V.St_18_H1	81	SS.SMx.CMx.FluHyd	Flustra foliacea and Hydrallmania falcata on tide-swept circolittoral mixed sediment	
Station 18	V.St_18_H2	53	SS.SCS.CCS	Circolittoral coarse sediment	
Station 18	V.St_18_H3	77	SS.SCS.CCS	Circolittoral coarse sediment	
Station 20	V.St_20_H1	87	SS.SMx.CMx.FluHyd	Flustra foliacea and Hydrallmania falcata on tide-swept circolittoral mixed sediment	
Station 20	V.St_20_H2	71	CR.HCR.XFa	Mixed faunal turf communities	Note there were 71 taxa between this biotope and CR.HCR.XFa.FluCoAs.SmAs.
Station 20	V.St_20_H2	71	CR.HCR.XFa.FluCoAs.SmAs	Flustra foliacea, small solitary and colonial ascidians on tide-swept circolittoral bedrock or boulders	Note there were 71 taxa between this biotope and CR.HCR.XFa.
Station 21	V.St_21_H1	92	CR.HCR.XFa.FluCoAs.SmAs	Flustra foliacea, small solitary and colonial ascidians on tide-swept circolittoral bedrock or boulders	Note there were 92 taxa between biotopes CR.HCR.XFa.FluCoAs.SmAs, CR.MCR.CSab.Sspi.As, SS.SBR.PoR.SspiMx and SS.SCS.CCS in Station 21.

Station	Sample	No of taxa	Biotope Code	Biotope Description	Notes
Station 21	V.St_21_H1	92	CR.MCR.CSab.Sspi.As	Sabellaria spinulosa, didemnids and other small ascidians on tide-swept moderately wave-exposed circalittoral rock	
Station 21	V.St_21_H1	92	SS.SBR.PoR.SspiMx	Sabellaria spinulosa on stable circalittoral mixed sediment	
Station 21	V.St_21_H1	92	SS.SCS.CCS	Circalittoral coarse sediment	

4. Example Biotope images



Biotope Code and Name - SS.SCS.CCS Circolittoral coarse sediment. Station_06_H1.



Biotope Code and Name - SS.SCS.CCS Circolittoral coarse sediment. Station_07_H1



Biotope Code and Name - SS.SCS.CCS Circalittoral coarse sediment Station_00_H1



Biotope Code and Name - SS.SCS.CCS Circalittoral coarse sediment Station_21_H1



Biotope Code and Name - CR.HCR.XFa Mixed faunal turf communities Station 20 H1



Biotope Code and Name - CR.HCR.XFa.FluCoAs.SmAs *Flustra foliacea*, small solitary and colonial ascidians on tide-swept circalittoral bedrock or boulders Station 20 H2



Biotope Code and Name - CR.MCR.EcCr.FaAlCr.Flu *Flustra foliacea* on slightly scoured silty circalittoral rock Station 07 H2



Biotope Code and Name - CR.MCR.CSab.Sspi.As *Sabellaria spinulosa*, didemnids and other small ascidians on tide-swept moderately wave-exposed circalittoral rock St 20 H2



Biotope Code and Name - CR.MCR.CSab.Sspi.ByB *Sabellaria spinulosa* with a bryozoan turf and barnacles on silty turbid circalittoral rock Station 05 H1



Biotope Code and Name - SS.SMx.CMx.FluHyd *Flustra foliacea* and *Hydrallmania falcata* on tide-swept circalittoral mixed sediment Station 20 H1



Biotope Code and Name - SS.SMx.CMx.FluHyd *Flustra foliacea* and *Hydrallmania falcata* on tide-swept circalittoral mixed sediment Station 12 H1



Biotope Code and Name - SS.SBR.PoR.SspiMx. *Sabellaria spinulosa* on stable circalittoral mixed sediment. Station 05 H2



Biotope Code and Name - SS.SBR.PoR.SspiMx. *Sabellaria spinulosa* on stable circalittoral mixed sediment. Station 21 H1

Data Archive Appendix

The data archive contains:

[A] Draft Snapshot data

[B] Data validation table

Metadata for this project is publicly accessible through Natural Resources Wales' Library Catalogue <https://libcat.naturalresources.wales> (English Version) and <https://catllyfr.cyfoethnaturiol.cymru> (Welsh Version) by searching 'Dataset Titles'. The metadata is held as record no NRW_DS125640.

The raw image data can be found through this record number (on the NRW K drive).



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