Beatrice Offshore Wind Farm Post-Construction Monitoring Year 2 (2021): Benthic Grab Survey Report

Beatrice Offshore Wind Farm Ltd

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Contents

List of Figures

List of Tables

Executive Summary

As part of a post-construction sampling programme to partially discharge Condition 27 of the Beatrice OWF Section 36 consent, APEM Ltd was commissioned by Beatrice Offshore Windfarm Ltd (BOWL) to undertake a benthic grab survey at the Beatrice offshore wind farm (OWF) site in July 2021 (Year 2 post-construction). In addition to this survey, an underwater video survey was conducted at four of the turbine locations with further details provided in APEM (2022).

Twelve grab stations were selected to provide representative coverage of the '*Moerella* spp. with venerid bivalves in infralittoral gravelly sand' (A5.133) biotope that was identified as being of high importance in the Beatrice OWF Environmental Statement and Supplementary Environmental Information Statement and is representative of the 'Tide-swept coarse sands with burrowing bivalves' Scottish Priority Marine Feature (PMF). Ten of the stations were located within the OWF boundary, with two reference stations located to the north east of the OWF. All stations corresponded to locations that were sampled during the Environmental Impact Assessment site characterisation study undertaken in 2010, the pre-construction benthic survey that was conducted in 2015 and the post-construction benthic survey that was carried out in 2020 (CMACS 2011, BOWL 2015, APEM 2021).

At each of the twelve locations, three replicate samples were acquired using a 0.1 m^2 Hamon grab. A 500 ml subsample was removed from each replicate for particle size analysis (PSA) and the remaining sediment was preserved in 4% buffered formaldehyde solution for macrobiota analysis.

PSA results indicated that sediment primarily comprised of sandy substrate across the OWF site with some within-station and between station variation in sediment composition. Under the British Geological Survey (BGS) modified Folk classification (Folk 1954, Long 2006), seven stations in the OWF had at least two replicates classed as Sand. This was similar to both the 2010 and 2015 surveys for which seven and eight of the OWF stations had at least two replicates classed as Sand respectively, in comparison to only three stations during the 2020 survey. At the reference stations three of the six replicates were classed as Slightly Gravelly Sand, with two Gravelly Sand replicates and one Sand replicate which was consistent with the 2015 survey. In 2020, five of the replicates were classed as Gravelly Sand with one Sand replicate.

There was a biologically diverse community across the survey area with a total of 245 taxa recorded across the 12 stations. Trends in both abundance and taxon richness across stations were found to be relatively similar within the OWF site and across the OWF site and reference stations. At stations where higher abundances of invertebrate individuals and taxa were recorded, it was typically due to the contribution of polychaete worms and molluscs which is consistent with the 2010, 2015 and 2020 surveys (CMACS 2011, BOWL 2015, APEM 2021).

The only recorded species with a conservation importance designation was the ocean quahog *Arctica islandica*, which is a bivalve listed as a Scottish PMF and is also on the OSPAR list of threatened and/or declining species and habitats (OSPAR 2008); five individuals, all juveniles, were recorded across the survey. This was consistent with the 2010, 2015 and 2020 surveys where small numbers of juvenile *A. islandica* were recorded.

Across both OWF and reference stations, a total of three non-native species were identified (the polychaete *Goniadella gracilis* (five individuals), the amphipod *Monocorophium* sextonae (one individual) and the Japanese skeleton shrimp *Caprella mutica* (one individual)). One species considered to be cryptogenic (i.e. that are neither demonstrably native nor non-native) was recorded (the crustacean *Crassicorophium crassicorne*), with six individuals across samples.

The most abundant taxon during the current survey was the small sea urchin *Echinocyamus pusillus* which was recorded in high abundances and at every station across the OWF site and reference stations, followed by the mollusc *Cochlodesma praetenue* which was recorded at all but one station. *E. pusillus* was also recorded in high abundances during the 2015 pre-construction survey but was less abundant in the 2010 baseline and 2020 post-construction surveys. *C. praetenue* was consistently abundant in all previous surveys. Other abundant taxa recorded during the current survey included *Asbjornsenia pygmaea* (formerly known as *Morella pygmaea*), *Spisula* sp. and *Abra prismatica*. When compared to the results of the previous surveys there has generally been a decrease in the density of key polychaete taxa (e.g. *O. borealis*, *Glycera lapidum* and *Hydroides norvegica*) and an increase in the density of the mollusc *A. prismatica* following the 2020 survey, with the 2021 densities more similar to those recorded in 2015. The densities of key molluscs such as *C. praetenue* and *A. pygmaea* have remained relatively consistent across surveys. A notable difference between surveys is the changes in density of the echinoderm *E. pusillus* with a three-fold increase in 2021 compared to 2015 and a six-fold increase compared to 2020.

Two biotopes and a variant of one of the biotopes were allocated to replicates based on the results of the 2021 post-construction survey. The biotope '*Moerella* spp. with venerid bivalves in Atlantic infralittoral gravelly sand' (referred to as MoeVen) (JNCC code: SS.SCS.ICS.MoeVen; EUNIS code: A5.133) was recorded at all of the stations in 2010 (CMACS 2011), three stations during the pre-construction survey in 2015 (BOWL 2015) and 10 of the stations during the 2020 post-construction survey (APEM 2021). However, during the current 2021 post-construction survey, the MoeVen biotope was not assigned to any replicate. The most dominant biotope was '*Echinocyamus pusillus*, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand' (referred to as EpusOborApri) (SS.SSa.CFiSa.EpusOborApri; A5.251), which was also the dominant biotope during the pre-construction survey (BOWL 2015). During the current survey this biotope was assigned to all three replicates at nine of the stations (G1, G2, G3, G5, G6, G7, G8 G9 and G12) in addition to two replicates at Station G11 and one replicate at Station G4. Additionally, a variation of the biotope EpusOborApri was assigned to one of the replicates at Station G4 as although the sample consisted of species typical of EpusOborApri, other taxa such as the polychaete *Capitella* sp. also dominated. The second biotope recorded during the 2021 post-construction survey was 'Circalittoral mixed sediment' (SS.SMx.CMx; A5.44) which was assigned to one replicate at Stations G4 and G11.

Although the status of the MoeVen biotope was the main focus of the survey due to it being a component biotope of the Scottish PMF 'Tide-swept coarse sands with burrowing bivalves', it should be noted that the EpusOborApri biotope is a component biotope of the Scottish PMF 'Offshore subtidal sands and gravels' and is therefore also of marine nature conservation importance in Scottish territorial waters (SNH 2014). Additionally, EpusOborApri is very similar to the MoeVen biotope and may contain similar species such as *A. pygmaea* and *G. lapidum* which were noted as some of the most abundant taxa within samples.

Changes in biotope allocation between the current survey and the 2020 post-construction and 2015 pre-construction surveys is likely due to a combination of changes in the relative abundances of the taxa characteristic of the assigned biotopes (in particular increases in the abundance of *E. pusillus*), and to subtleties in the definitions of the biotopes. This was supported by ANOSIM results when comparing 2015 pre-construction and 2021 post-construction surveys which suggested an overlap of characterising species and SIMPER results indicated that the same species were present in both surveys, with the main differences being associated with the relative abundance of different taxa.

Additionally, the change in biotope allocation between pre- and post-construction surveys may also be due to environmental changes within the OWF site. This is supported by the results of the RELATE and BIO-ENV tests between environmental and faunal data which indicated a fairly strong and significant correlation between the multivariate patterns observed in the sediment data and between faunal communities. Results indicated that environmental factors are likely having an effect on the biological data, specifically the amount of very coarse sand which may be influencing the biotopes present.

Overall, the current monitoring survey indicates that there has been a shift in the dominant biotope from MoeVen during the 2020 survey to EpusOborApri during the 2021 survey, with no replicates assigned to the MoeVen biotope in 2021, which is more consistent with the results of the 2015 pre-construction survey. This shift is apparent in the OWF site and at the reference stations. Data to date suggest that biotopes at the site are mainly transitional between the MoeVen and EpusOborApri biotopes and the benthic communities and associated sediment types naturally fluctuate between these biotopes. Based on monitoring to date there is no evidence that the Beatrice OWF development has had an impact on the MoeVen biotope beyond changes due to natural variation.

1. Introduction

1.1 Scope of Work

1.1.1 Project background

This report presents the results of the second round of post-construction benthic grab survey undertaken by APEM Ltd at the Beatrice Offshore Wind Farm (OWF) site. The survey was conducted to partially discharge Condition 27 of the Beatrice OWF Section 36 consent which states that the Project Environmental Monitoring Programme (PEMP) must cover, but not be limited to:

“Pre-construction, construction (if considered appropriate by the Scottish Ministers) and post-construction monitoring surveys as relevant in terms of the Environmental Statement and any subsequent surveys for….[6] benthic communities; and [7) (Seabed scour and) local sediment deposition.”

The work forms part of the benthic monitoring strategy for the Beatrice OWF and Offshore Transmission Works (OfTW) cable corridor for Beatrice Offshore Windfarm Ltd (BOWL). The wider survey included use of underwater video to record biofouling on turbine foundation jackets and determine sediment type and epifaunal abundance in the immediate vicinity of the turbines (results of the survey are provided in APEM (2021)). Methods followed those set out in the Benthic Post-Construction Monitoring Strategy (RPS/BOWL 2015), refined following discussion at a meeting of the Moray Firth Regional Advisory Group (MFRAG) on 11th June 2020, and subsequent email correspondence.

1.1.2 Survey objectives

The objective of the benthic grab survey was to acquire samples from the marine benthic environment to help characterise benthic macrobiota communities within the OWF site and at selected reference stations following the pre-construction baseline and first round of post-construction monitoring conducted by APEM in 2015 and 2020 respectively, for areas that had been assigned the biotope ‘*Moerella* spp. with venerid bivalves in infralittoral gravelly sand’ (JNNC code: SS.SCS.ICS.MoeVen, EUNIS code: A5.133; referred to hereon as the MoeVen biotope). In particular, the aim was to address the following question:

- Is there a significant (i.e. measurable) impact on the MoeVen biotope in deep water within the OWF site as predicted in the Beatrice OWF ES? If so, does this biotope exhibit signs of recovery that is a similar degree of functional (ecosystem process) diversity, within the timescales predicted within the Beatrice OWF ES (i.e. within five years)?

This question can also be framed as:

- Is there a measurable impact on the MoeVen biotope in deep water within the OWF site since the construction of the wind farm, as predicted in the Beatrice OWF ES? If so, does this biotope exhibit signs of recovery? Should a difference in biotopes be found, does the new biotope present a similar diversity (i.e. species composition and richness) to the MoeVen biotope and does this new biotope have a similar ecosystem function? Does this recovery or change in biotope happen within the timescales predicted for ecosystem recovery, within the Beatrice OWF ES (i.e. within five years)?

The MoeVen biotope is a component biotope of the Scottish Priority Marine Feature (PMF) ‘Tide-swept coarse sands with burrowing bivalves’ (Scottish Natural Heritage 2014). This post-construction data set will enable comparison with pre-construction survey results to test the predictions of the project Environmental Statement (ES) and Supplementary Environmental Information Statement (SEIS), and the associated degree of certainty in these predictions. As part of the assessment, any species of potential conservation importance or environmental concern, such as those on the International Union for the Conservation of Nature (IUCN) Red List of Globally Threatened Species (Bratton 1991), those under the OSPAR (2008) list of threatened and/or declining species and habitats, invasive non-native species (INNS) or Scottish Priority Marine Features (PMFs) were noted (SNH 2014).

1.1.3 Survey design

Sampling was conducted at 12 grab stations (Figure 1) to provide representative coverage of the MoeVen biotope. This biotope is representative of the ‘Tide-swept coarse sands with burrowing bivalves’ PMF and was identified as being of high importance in the Beatrice OWF ES and SEIS. Ten of the stations were located within the OWF boundary, with two reference stations located to the north east of the OWF. All stations corresponded to locations that were sampled during the EIA site characterisation study undertaken in 2010 (CMACS 2011), the pre-construction grab survey conducted in 2015 (BOWL 2015) and first round of post-construction grab surveys in 2020 (APEM 2021).

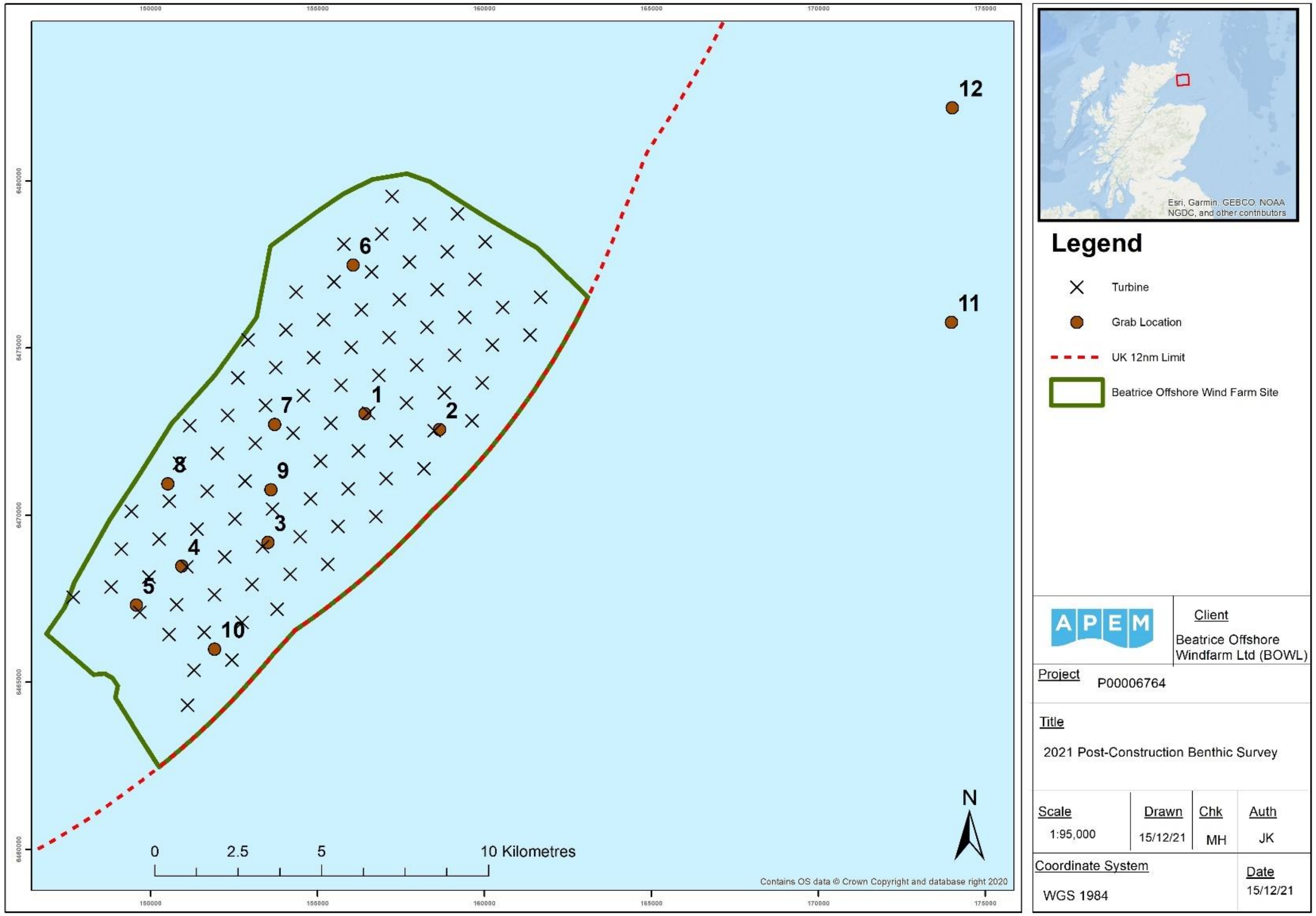

Figure 1. Sample station locations for benthic grab sampling.

2. Methodology

2.1 Survey Vessel and Permissions

The benthic grab sampling survey was undertaken aboard the Moray First Marine vessel ‘Waterfall’ (see Figure 2), mobilising from Montrose. The Waterfall is a 16 m Aluminium Catamaran workboat rated to 60 miles offshore under MCA Category II classification.

The Waterfall has been audited by the International Marine Contractors Association (IMCA) and was audited by Beatrice Offshore Windfarm Ltd (BOWL) for this project.

All survey permissions were obtained by BOWL prior to the survey commencing.

Figure 2. MFM vessel Waterfall used during the benthic grab sampling survey.

2.2 Grab Sampling

Grab sampling was conducted on 16th and 17th June 2021.

Survey work was conducted using a 0.1 m^2 Hamon grab, with three replicate samples taken at each station. The locations of each grab sample are available in Appendix 1. A 500 ml subsample of sediment was removed from each grab for particle size analysis (PSA), and the remaining sediment was then sieved over a 1.0 mm mesh and preserved for biological analysis.

A minimum of 5 litres of sediment was defined as an acceptable sample size. If this criterion was not met, then a further four attempts were made at the same location. Using this approach valid samples were collected at each station.

For each grab sample the following data was recorded on a survey logsheet:

- Station and attempt number;
- Replicate number;
- Co-ordinates;
- Water depth;
- Sample volume;
- Sample description (visual assessment with addition notes on colour, smell, redox layer, texture and surface features);
- Time for grab to reach the seabed;
- Obvious or notable biota (e.g. species of conservation importance (to include ocean quahog – shell dimensions will be recorded for this species where possible) and non-native species); and
- Reference numbers for photographs taken of the pre-sieved and post-sieved sediment.

For each grab sampling attempt, the following steps were followed in accordance with the protocols established by Cooper & Mason (2017):

1) Excess water was poured off from the sample over the sieve table;
2) Sample was photographed (with label);
3) Sample volume was measured;
4) Sample was washed and sieved on the sieve table;
5) The material retained on the sieve table mesh was photographed; and
6) The sieved sample was transferred to a bucket and labelled internally and externally with the project number, date, station and sample number.

To be valid, samples had to meet two criteria. Firstly, samples must be of an acceptable volume, usually > 5 litres. Secondly, there must be no indication of a significant malfunction in the grab (Cooper & Mason 2017). If these criteria were not met then a further three attempts were made at the same location, followed by repeat attempts at a different location approximately 50 m from the original target.

Replicates for infauna determinations were sieved over a 1.0 mm mesh and the retained material transferred to a suitable, labelled container and fixed in 4% buffered formaldehyde solution for later laboratory analysis. Conspicuous fauna or large material were removed to a separate container prior to sieving to avoid damage to smaller material.

2.3 Laboratory Processing

2.3.1 *Macrobiota*

Sample analysis was conducted according to APEM’s standard operating procedure for marine benthic sample analysis which is fulling compliant with the North-East Atlantic Marine Biological Analytical Quality Control (NMBAQC) Scheme’s Processing Requirement Protocol (PRP), (Worsfold *et al*. 2010).

To standardise the sizes of organisms recorded, and to separate preservative from the biota, all samples were washed over a 1 mm sieve in a fume cupboard. All biota retained in the sieve were then extracted, identified and enumerated, where applicable.

Taxa were identified to the lowest practicable taxonomic level (usually species), using appropriate taxonomic literature. For certain taxonomic groups (e.g. nemerteans, nematodes, and certain oligochaetes), higher taxonomic levels were used due to the widely acknowledged lack of appropriate identification tools for these groups. The NMBAQC Scheme’s Taxonomic Discrimination Protocol (TDP) (Worsfold *et al*. 2010), which gives guidance on the most appropriate level to which different marine taxa should be identified, was adhered to for the laboratory analysis. Where required, specimens were also compared with material maintained within the laboratory reference collection. Nomenclature followed the World Register of Marine Species (WoRMS, WoRMS Editorial Board 2017), except where more recent published literature that had not yet been incorporated into the WoRMS list was known to exist.

All samples were subject to internal quality assurance procedures and, following analysis, 10% of samples were subject to formal Analytical Quality Control (AQC). For archiving purposes, all samples were stored in 70% industrial denatured alcohol (IDA) solution. At least one example of each taxon recorded from the surveys was set aside for inclusion in APEM’s in-house reference collection. This collection acts as a permanent record of the biota recorded.

2.3.2 *Biomass Estimations*

The estimation of biomass was undertaken according to APEM’s standard operating procedure and the NMBAQC Scheme guidance and TDP (Worsfold & Hall 2010).

APEM use a non-destructive biomass procedure that is fully compliant with the methods outlined in the Clean Seas Environmental Monitoring Programme (CSEMP) Green Book (CSEMP, 2012). Animals were blotted dry before transfer to a tared analytical balance. Biomass values were recorded as blotted wet-weight, +/- 0.0001g. Taxa weighing less than 0.0001g were given a nominal weight of 0.0001g. Barnacles, ascidians, cnidarians and non-countable taxa were not weighed.

Faunal biomass analysis was undertaken at recorded taxon level and included juveniles. Biomass (g per m^2) was then calculated on a per station basis.

To allow direct comparison with values in the 2010 site characterisation report (CMACS 2011), biomass values for each taxon were converted to Ash Free Dry Weight (AFDW) using the same conversion factors based on major taxonomic groups (Polychaeta, Oligochaeta, Crustacea, Mollusca, Echinodermata and 'Others') used in CMACS (2011), BOWL (2015) and APEM (2021) which were adapted from Ricciardi & Bourget (1998).

2.3.3 Particle Size Analysis

Sub-sampling and PSA was performed in accordance with NMBAQC Best Practice Guidance (Mason 2016), with the modification that the wet separation was performed at 2 mm rather than 1 mm, to determine the 'gravel' to 'sand and mud' proportions by weight. A combination of dry sieving and laser diffraction was used depending upon the characteristics of the sediment.

2.4 Data Analysis

2.4.1 Particle Size Distribution

The particle size data from all survey replicates were combined as consistent size fractions and entered into GRADISTAT (Blott & Pye 2001) to produce sediment classifications, following Wentworth (1922) (Tables 1 and 2) and Folk (1954), (Figure 3). To enable comparison with the outputs of the 2010 EIA characterisation report (CMACS 2011), 2015 survey report (BOWL 2015) and 2020 survey report (APEM 2021), GRADISTAT outputs were converted to the British Geological Survey (BGS) modified Folk categories based on Long (2006). Summary statistics were also calculated including mean (Phi) (Table 1), sorting (Table 2), skewness and kurtosis (following Blott & Pye 2001).

Table 1. Sediment classifications based on Wentworth (1922).

Aperture in microns	Phi Aperture	Sediment Description
≥16000 to 2000	≤-4 to -2	Pebbles
<4000 to 2000	>-2 to -1	Granules
<2000 to 1000	>-1 to 0	Very Coarse Sand
<1000 to 500	>0 to 1	Coarse Sand
<500 to 250	>1 to 2	Medium Sand
<250 to 125	>2 to 3	Fine Sand
<125 to 63	>3 to 4	Very Fine Sand
<63 to 44	>4 to 4.5	Silt (Mud)

Table 2. Sediment sorting categories based on Wentworth (1922).

Sorting Coefficient (Graphical Standard Deviation)	Sediment Sorting Categories
0 < 0.35	Very well sorted
0.35 < 0.50	Well sorted
0.50 < 0.71	Moderately well sorted
0.71 < 1.00	Moderately sorted
1.00 < 2.00	Poorly sorted
2.00 < 4.00	Very poorly sorted
>4	Extremely poorly sorted

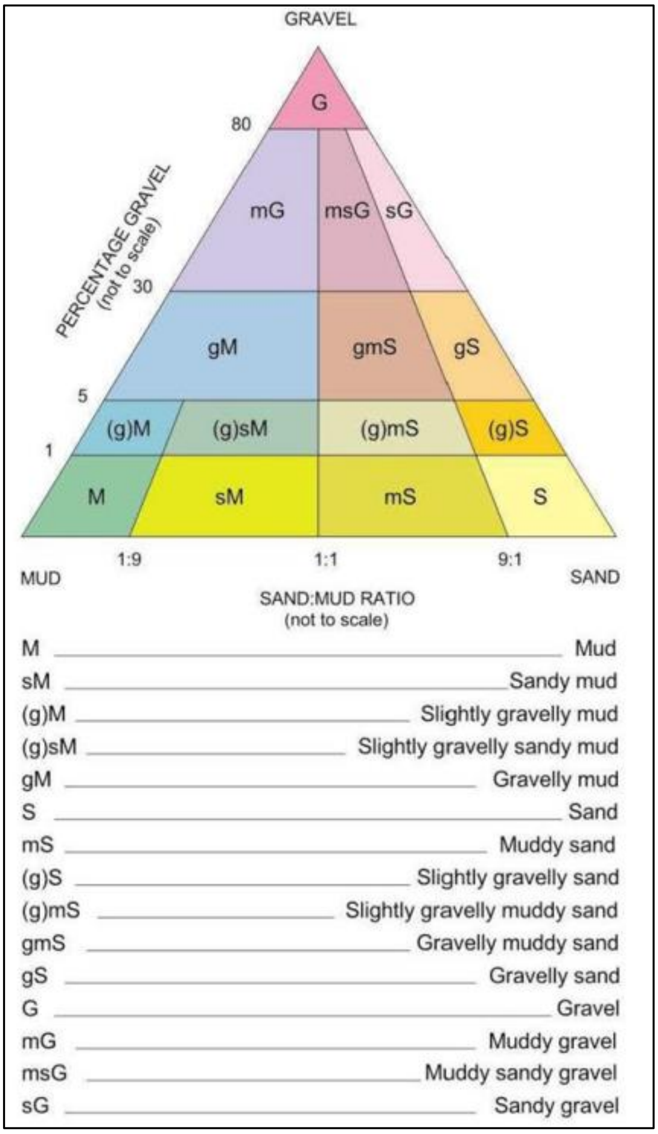

Figure 3. British Geological Survey modified Folk (1954) classifications based on Long (2006).

2.4.2 Macrobiota

Before analysis, all data were checked for errors. Summary statistics were calculated, and outlying values investigated to identify possible data transcription errors. As is standard practice, truncation of the biological data was undertaken before calculation of summary statistics and other statistical analyses (see Table 3).

For analyses based on numbers of individuals, any non-countable taxa, copepods, fish and fragments of individuals were also omitted from analysis.

Table 3. Details of data truncation performed prior to statistical analysis.

Taxon / Records	Details of truncation performed
Nemertea	Fragments removed from samples
Pholoe baltica (sensu Petersen)	Fragments removed from samples
Goniada maculata	Fragments removed from samples
Nephtys	Fragments removed from samples
Nephtys cirrosa	Fragments removed from samples
Aponuphis bilineata	Fragments removed from samples
Lumbrineris cingulata	Fragments removed from samples
Protodorvillea kefersteini	Fragments removed from samples
Orbiniidae	Records combined with *Orbinia sertulata*
Scoloplos armiger	Fragments removed from samples
Scolelepis korsuni	Fragments removed from samples
Spiophanes bombyx	Fragments removed from samples
Chaetozone christiei	Fragments removed from samples
Mediomastus fragilis	Fragments removed from samples
Leiochone	Fragments removed from samples
Euclymene lombricoides	Fragments removed from samples
Owenia	Fragments removed from samples
Polycirrus	Fragments removed from samples
Hydroides norvegica	Fragments removed from samples
Mesopodopsis slabberi	Fragments removed from samples
Modiolus	Records combined with *Modiolus*
Spisula elliptica	Adults and juvenile records combined
Gari fervensis	Adults and juvenile records combined
Gari tellinella	Adults and juvenile records combined
Chamelea striatula	Adults and juvenile records combined
Clausinella fasciata	Adults and juvenile records combined
Cochlodesma praetenue	Adults and juvenile records combined
Phoronis	Fragments removed from samples
Centraloecetes striatus	Records combined with *Centraloecetes kroyeranus*
Galathea	Records combined with *Galathea intermedia*
Spatangoida	Adults and juvenile records combined
Echinocardium	Fragments removed from samples

In accordance with EN ISO16665:2014 guidelines, an initial analysis was carried out with juveniles recorded separately from adults. Juveniles were identified to the lowest practicable taxonomic level, following APEM's taxonomic discrimination protocol. To determine the influence of juveniles within the samples, the mean abundance per 0.1 m^2 for all taxa at all stations both with and without juvenile taxa was compared in PRIMER using a RELATE analysis. The results of the analysis informed whether the data set was to be analysed inclusive of juveniles, or if analysis of a separate adult-only data set was also to be required, in line with OSPAR (2004) guidance. However, as there is no inter-laboratory standard for definition of juveniles, the distinction is arbitrary.

The results of the RELATE analysis are presented in Appendix 8 and indicated that the full and adult-only data sets were over 99% similar. As such, all analyses of the macrobiota data was conducted on the full data set including juveniles. Where juveniles and adults of the same taxon were recorded, these were combined as a single entry for subsequent analysis of abundances (see Table 3).

2.4.3 Univariate analysis

Univariate community analyses were undertaken using the PRIMER software package. Biological diversity within a community was assessed based on taxon richness (total number of taxa present) and evenness (considers relative abundances of different taxa). The following metrics were calculated:

- **Shannon-Wiener Diversity Index (H'(loge):** This is a widely used measure of diversity accounting for both the number of taxa present and the evenness of distribution of the taxa (Clarke & Warwick 2006).
- **Margalef's species richness (d):** This is a measure of the number of species present for a given number of individuals.
- **Pielou's Evenness Index (J'):** This represents the uniformity in distribution of individuals spread between species in a sample. High values indicate more evenness or more uniform distribution of individuals. The output range is from 0 to 1.
- **Simpson's Dominance Index (1-λ):** This is a dominance index derived from the probability of picking two individuals from a community at random that are from the same species. Simpson's dominance index ranges from 0 to 1 with higher values representing a more diverse community without dominant taxa.

Where mean values have been calculated per station, the standard deviation has been provided.

2.4.4 Multivariate analysis

Macrofaunal data were subjected to multivariate analysis using the PRIMER software package (Clarke & Warwick 2006).

Multivariate analyses were computed from resemblance or similarity matrices. The particle size data resemblance matrix was calculated using Euclidean Distance following normalisation. For the macrofaunal data set, the Bray-Curtis measure of similarity was used following a square root transformation of the data to reduce the influence of highly abundant or dominant species.

2.4.4.1 Cluster analysis

Cluster analysis was utilised to provide a visual representation of sample similarity in the form of a dendrogram. Cluster analysis was conducted in conjunction with a SIMPROF (similarity profile) test to determine whether groups of samples were statistically indistinguishable at the 5% significance level, or whether any trends in groupings were apparent. Black lines on the dendrogram indicate statistical distinctions between sampling stations, whilst red lines indicate that the samples were statistically inseparable.

2.4.4.2 Ordination analysis using non-metric Multidimensional Scaling

Non-metric multidimensional scaling (MDS) is a type of ordination method which creates a 2- or 3-dimensional ‘map’ or plot of the samples from the PRIMER resemblance matrix. The plot generated is a representation of the dissimilarity of the samples (or replicates), with distances between the replicates indicating the extent of the dissimilarity. For example, replicates that are more dissimilar are further apart on the MDS plot. No axes are present on the MDS plots as the scales and orientations of the plots are arbitrary in nature.

Each MDS plot provides a stress value which is a broadscale indication of the usefulness of plots, with a general guide indicated below (Clarke & Warwick, 2006):

<0.05	Almost perfect representation of rank similarities;
0.05 to <0.1	Good representation;
0.1 to <0.2	Still useful;
0.2 to <0.3	Should be treated with caution;
>0.3	Little better than random points.

2.4.4.3 SIMPER

Where differences between groups of samples were found, SIMPER analysis was used to determine which taxa were principally responsible for the differences between the statistically distinct groups of stations. Results from the SIMPER analysis are presented in Appendix 9.

2.4.4.4 RELATE & BIO-ENV

The RELATE function of PRIMER was utilised to find out whether there was a correlation between faunal assemblages and sediment composition. The RELATE routine uses permutation tests to estimate the likelihood of the biological and environmental resemblance matrices sharing a similar multivariate pattern. It uses a rank correlation coefficient to measure the agreement between all the elements in the similarity matrices. To determine which sediment particle sizes correlated most strongly with the patterns observed within the faunal communities, the data were tested using the BIO-ENV routine. Results of the RELATE and BIO-ENV analyses are present in Appendix 10.

2.4.5 ANOSIM and SIMPER: Comparison between pre- and post-construction surveys

Pre- and post- construction data matrices were truncated, combined and analysed using ANOSIM and SIMPER to compare and better understand the main differences between faunal data. Results of the SIMPER and ANOSIM analyses are present in Appendices 11 and 12, respectively.

2.4.6 Biotope allocation

The invertebrate count data and PSA results, and outputs of the cluster analysis, SIMPROF and SIMPER analysis, were interpreted to allocate biotopes to each replicate sample. Biotopes were allocated following EUNIS (EEA 2017). Equivalent codes based on Joint Nature Conservation Committee’s (JNCC) National Marine Habitat Classification for Britain and Ireland: Version 04.05 (Connor *et al*. 2004) have also been provided (JNCC 2010), (Table 7).

3. Results

3.1 Particle Size Analysis

Full PSA data for the subtidal sediments are presented in Appendix 3 and summary data are provided in Table 4.

3.1.1 OWF site

Overall, sediment type was similar across the survey area and was predominantly sandy. Mean particle size across the majority of samples was generally <400 µm, with the lowest mean value being 280.2 µm (replicate G1A) and the highest mean value being 819.1 µm (replicate G3B, towards the centre of the OWF). Sediments within most samples typically had very high percentages of sand (i.e. particle size >63 µm to 2 mm), which was often >95%. However, the results indicated a small amount of within-station variability in sediment composition, and there were some slight differences in sediment composition between stations (Table 4, Figure 4).

Across all replicates, mud represented <3% of sediment composition (Table 4), with the expectation of replicate G4A which had mud composition of approximately 5%. Similarly, gravel also comprised very low percentages of the overall sediment composition with the exception of replicates G3B and G4A, which had an overall gravel composition of approximately 10% and 8.8% respectively.

Under Wentworth sediment classification scale, 26 of the replicates across the OWF site were classified as Medium Sand and 10 were classified as Coarse sand.

Under the BGS modified Folk classification system (Long 2006), the majority of replicates were classified as Sand (19 replicates) followed by Slightly Gravelly Sand (9 replicates) and Gravelly Sand (2 replicates). Six stations had the same category allocated to all three replicates (Sand at G1, G2, G6, G7 and G9 and Slightly Gravelly Sand at G10), (Table 4).

3.1.2 Reference stations

In common with the OWF site results, replicates at the two reference stations, G11 and G12, located 10 to 15 km north east of the OWF site also had a very high percentage of sand (mean of 93.2 ± 5.8% at Station G11, and 90.9 ± 8.1% at Station G12), (Table 4). Gravel content across both OWF and reference stations was greatest at the reference station G12 (mean of 8.0 ± 8.3%) whilst at Station G11, gravel content was greater than the majority of OWF stations (mean of 4.4 ± 6.0%) with the exception of Stations G3 and G4 (means of 4.9 ± 4.5% and 5.0 ± 3.4% respectively). Under the Wentworth classification system, sediment across replicates was predominately medium sand at Station G11 and Coarse Sand at Station G12. Under the BGS modified Folk categories, the majority of replicates were classified as Slightly Gravelly Sand (3 replicates) followed by Gravelly Sand (2 replicates) and Sand (1 replicate).

Table 4. Summary of Particle Size Analysis data. SD = Standard Deviation.

Station	Sample	Mean (µm)	Gravel (%)	Sand (%)	Mud (%)	Wentworth	Folk*	Sorting
G1	A	280.20	0.23	98.05	1.72	Medium Sand	Sand	Moderately Sorted
G1	B	282.43	0.14	98.25	1.61	Medium Sand	Sand	Moderately Sorted
G1	C	274.17	0.18	98.15	1.67	Medium Sand	Sand	Moderately Sorted
Mean		**278.93**	**0.18**	**98.15**	**1.67**			
SD		**4.28**	**0.05**	**0.10**	**0.06**			
G2	A	359.25	0.55	98.14	1.31	Medium Sand	Sand	Moderately Sorted
G2	B	308.62	0.12	98.50	1.38	Medium Sand	Sand	Moderately Sorted
G2	C	330.67	0.07	98.65	1.29	Medium Sand	Sand	Moderately Sorted
Mean		**332.85**	**0.25**	**98.43**	**1.32**			
SD		**25.39**	**0.26**	**0.26**	**0.05**			
G3	A	697.45	3.58	95.91	0.51	Coarse Sand	Slightly Gravelly Sand	Moderately Sorted
G3	B	819.05	9.96	89.54	0.50	Coarse Sand	Gravelly Sand	Poorly Sorted
G3	C	477.11	1.23	97.65	1.12	Medium Sand	Slightly Gravelly Sand	Moderately Sorted
Mean		**664.53**	**4.92**	**94.37**	**0.71**			
SD		**173.33**	**4.52**	**4.27**	**0.35**			
G4	A	669.50	8.80	86.22	4.97	Coarse Sand	Gravelly Sand	Poorly Sorted
G4	B	515.08	3.63	95.41	0.96	Coarse Sand	Slightly Gravelly Sand	Moderately Sorted
G4	C	383.14	2.48	95.88	1.64	Medium Sand	Slightly Gravelly Sand	Moderately Sorted
Mean		**522.57**	**4.97**	**92.50**	**2.53**			
SD		**143.33**	**3.37**	**5.44**	**2.15**			

Station	Sample	Mean (µm)	Gravel (%)	Sand (%)	Mud (%)	Wentworth	Folk*	Sorting
G5	A	369.29	1.71	98.29	0.00	Medium Sand	Slightly Gravelly Sand	Moderately Well Sorted
G5	B	329.84	0.31	99.69	0.00	Medium Sand	Sand	Moderately Well Sorted
G5	C	335.79	0.16	98.68	1.15	Medium Sand	Sand	Moderately Well Sorted
Mean		**344.98**	**0.73**	**98.89**	**0.38**			
SD		**21.27**	**0.85**	**0.72**	**0.67**			
G6	A	299.89	0.76	97.39	1.84	Medium Sand	Sand	Moderately Well Sorted
G6	B	299.17	0.33	97.81	1.86	Medium Sand	Sand	Moderately Well Sorted
G6	C	295.77	0.41	97.32	2.27	Medium Sand	Sand	Moderately Well Sorted
Mean		**298.28**	**0.50**	**97.51**	**1.99**			
SD		**2.20**	**0.23**	**0.26**	**0.24**			
G7	A	294.46	0.12	98.17	1.71	Medium Sand	Sand	Moderately Sorted
G7	B	357.51	0.50	98.15	1.35	Medium Sand	Sand	Moderately Sorted
G7	C	314.28	0.20	97.87	1.93	Medium Sand	Sand	Moderately Sorted
Mean		**322.08**	**0.27**	**98.06**	**1.66**			
SD		**32.24**	**0.20**	**0.17**	**0.29**			
G8	A	337.69	0.28	99.72	0.00	Medium Sand	Sand	Moderately Well Sorted
G8	B	416.12	1.19	98.81	0.00	Medium Sand	Slightly Gravelly Sand	Moderately Sorted
G8	C	326.31	0.37	99.63	0.00	Medium Sand	Sand	Moderately Well Sorted
Mean		**360.04**	**0.61**	**99.39**	**0.00**			
SD		**48.90**	**0.50**	**0.50**	**0.00**			

Station	Sample	Mean (µm)	Gravel (%)	Sand (%)	Mud (%)	Wentworth	Folk*	Sorting
G9	A	347.34	0.37	97.86	1.77	Medium Sand	Sand	Moderately Sorted
G9	B	301.55	0.31	98.35	1.34	Medium Sand	Sand	Moderately Sorted
G9	C	298.76	0.09	98.52	1.39	Medium Sand	Sand	Moderately Well Sorted
Mean		**315.88**	**0.26**	**98.24**	**1.50**			
SD		**27.28**	**0.14**	**0.34**	**0.24**			
G10	A	599.19	1.91	97.39	0.70	Coarse Sand	Slightly Gravelly Sand	Moderately Sorted
G10	B	600.10	1.44	97.28	1.28	Coarse Sand	Slightly Gravelly Sand	Moderately Sorted
G10	C	612.46	1.13	98.21	0.66	Coarse Sand	Slightly Gravelly Sand	Moderately Sorted
Mean		**603.92**	**1.50**	**97.63**	**0.88**			
SD		**7.41**	**0.39**	**0.51**	**0.35**			
G11	A	394.19	1.43	96.76	1.81	Medium Sand	Slightly Gravelly Sand	Moderately Sorted
G11	B	813.65	11.36	86.46	2.18	Coarse Sand	Gravelly Sand	Poorly Sorted
G11	C	362.07	0.50	96.34	3.16	Medium Sand	Sand	Poorly Sorted
Mean		**523.30**	**4.43**	**93.19**	**2.38**			
SD		**251.96**	**6.02**	**5.83**	**0.70**			
G12	A	431.36	2.23	96.60	1.17	Medium Sand	Slightly Gravelly Sand	Poorly Sorted
G12	B	857.80	17.53	81.64	0.84	Coarse Sand	Gravelly Sand	Very Poorly Sorted
G12	C	537.08	4.29	94.35	1.36	Coarse Sand	Slightly Gravelly Sand	Poorly Sorted
Mean		**608.75**	**8.02**	**90.86**	**1.12**			
SD		**222.07**	**8.30**	**8.07**	**0.26**			

*British Geological Survey modified Folk (1954) classifications based on Long (2006).

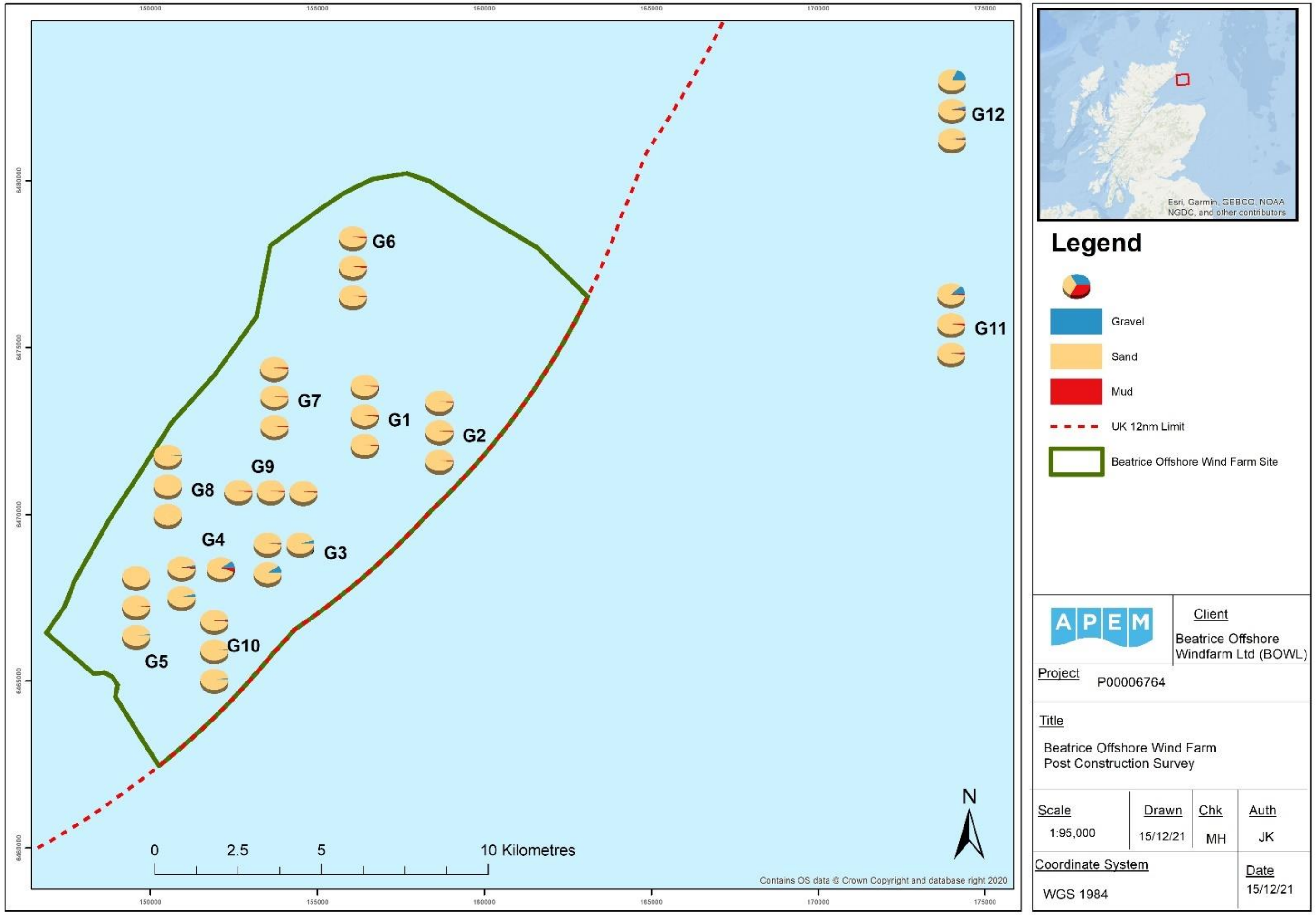

Figure 4. Proportions of sand, mud and gravel at sample stations (mean across replicates).

3.2 Macrobiota

Samples of adequate volume were successfully obtained at all twelve grab locations. A total of seven attempts at Station G12 yielded no sediment or a volume of less than 5 litres but with repeat attempts at this station three replicate samples were collected. Further details of the grab samples taken are provided in Appendix 2. Macrobiota data are presented in Appendix 4 and biomass data are available in Appendix 5.

3.2.1 Species of conservation importance

A total of five individuals of the ocean quahog *Arctica islandica* (all juveniles), were recorded across three replicates (three individuals at G5A, and one at G6B and G9A). This bivalve species is listed under the OSPAR (2008) list of threatened and/or declining species and habitats. Two individuals of northern horse mussel *Modiolus* were recorded at one replicate from Stations G4 and G12, but there was no evidence of *M. modiolus* reef habitat (an Annex I habitat under the EC Habitats Directive) during this survey or the accompanying underwater video survey (APEM 2022). No other species with conservation importance designations or protected species were recorded.

Across both OWF and reference stations, a total of three non-native species were identified. The polychaete *Goniadella gracilis* was recorded at Stations G3, G10 and G11 (total of five individuals); the amphipod *Monocorophium* sextonae was recorded at Station G7 (one individual) and the Japanese skeleton shrimp *Caprella mutica* was recorded at Station G12 (one individual). One species considered to be cryptogenic (i.e. that are neither demonstrably native nor non-native) was recorded (the crustacean *Crassicorophium crassicorne*), with six individuals across samples.

Sessilia sp. and *Aoridae* sp. were recorded within two replicate samples, *Ensis* sp. was recorded in three replicate samples and *Ascidiacea* sp. was recorded in seven replicate samples. At least one species of these taxa is considered non-native in the UK, however *Sessilia*, *Aoridae*, *Ensis* and *Ascidiacea* are taxonomically problematic and individuals were not identified to species in this study. Several other taxa have been highlighted as being notable with reasons indicated in Appendix 6. It is common for a large-scale survey to include new UK records and potential new species, due to the unresolved taxonomy and lack of published data for many groups.

3.2.2 Summary statistics

Across the survey a total of 245 taxa were recorded, of which 26 were non-countable. Post-truncation, 2815 individuals were recorded and of these, 299 individuals were recorded as juveniles (approximately 11% of total abundance), comprising 25 taxa.

3.2.2.1 Abundance

OWF site

Overall, the most abundant taxonomic group was molluscs with a mean density of 277 ± 10 individuals per m^2 (approximately 36% of total invertebrate abundance), followed by annelids with a mean density of 242 ± 28 individuals per m^2 (approximately 32% of total invertebrate abundance), (Table 5). Echinoderms constituted approximately 20% of invertebrate abundance (154 ± 12 individuals per m^2), invertebrates categorised in the ‘other countable taxa’ grouping constituted approximately 6% of invertebrate abundance (mean density of 46 ± 8 individuals per m^2) and crustaceans constituted approximately 5% of invertebrate abundance (mean density of 40 ± 4 individuals per m^2).

Station G4 was found to have the most abundant macrobiota with a mean density of 1,570 ± 1,187. For the remaining stations, densities per m^2 varied between 537 ± 59 individuals at Station G3 (in the southern section of the OWF site) and 953 ± 292 individuals at Station G10 (in the southern section of the OWF site) (Table 6, Figure 5 andFigure 6). There was some variability in invertebrate density across replicate samples at the majority of stations, which was most evident at Station G4 and the higher overall density at this station was primarily due to the very high invertebrate abundance within replicate G4A (294 individuals recorded) compared to replicates G4B and G4C (85 and 92 individuals, respectively), (Figure 7). Replicate G4A had the second highest gravel content of all OWF replicates (8.8%), and invertebrate abundance was elevated due to increased numbers of annelids and ‘other countable taxa’, in addition to some increases in the abundance of crustaceans and echinoderms compared to other replicates (Figure 7).

The most abundant taxon across the OWF site was the pea urchin *Echinocyamus pusillus* with a mean density of 139 ± 79 individuals per m^2, followed by the mollusc *Cochlodesma praetenue* with a mean density of 64 ± 46 individuals per m (which was also the most abundant species in the 2015 pre-construction survey and 2020 post-construction surveys (83 ± 62 and 69 ± 63 individuals per m^2 respectively)).

Other abundant molluscs were *Asbjornsenia pygmaea* (formerly known as *Morella pygmaea*) (mean density of 41 ± 36 individuals per m^2), *Spisula* sp. (mean density of 35 ± 18 individuals per m^2) and *Abra prismatica* (mean density of 33 ± 19 individuals per m^2). The mollusc *A. pygmaea* is a key component of the ‘*Moerella* spp. with venerid bivalves in infralittoral gravelly sand’ (MoeVen; EUNIS code: A5.133) biotope but is also characteristic of other biotopes, including ‘*Echinocyamus pusillus, Ophelia borealis* and *Abra prismatica* in circalittoral fine sand’ (EUNIS code: A5.251). The most abundant venerid bivalve was *Chamelea striatula* (18 ± 13 individuals per m^2) followed by *Dosinia* spp. (14 ± 9 individuals per m^2). Other venerid bivalves such as *Clausinella fasciata*, *Dosinia lupinus, Dosinia exoleta* and *Timoclea ovata* were recorded in very low numbers.

The most abundant annelids were *O. borealis* and *Aponuphis bilineata* with mean densities of 14 ± 25 and 11 ± 11 respectively. Other taxa found in high abundances was the mollusc *Crenella decussata* (20 ± 19 individuals per m^2) and the Sipuncula *Phascolion strombus* (16 ± 24 individuals per m^2).

Distribution figures indicating abundance at the OWF site and reference stations are provided in Appendix 7 for *A. prismatica, A. pygmaea*, *E. pusillus* and *O. borealis* as they are characteristic species of biotopes that were assigned based on the grab sample data (see Section 3.2.4).

Reference stations

At reference stations, the most abundant taxonomic group was annelids with a mean density of 310 ± 372 individuals per m^2 (approximately 35% of total invertebrate abundance), followed by molluscs and crustaceans which comprised approximately 23% (203 ± 66 individuals per m^2) and approximately 19% (173 ± 376 individuals per m^2) of invertebrate abundance, respectively (Table 5). ‘Other countable’ taxa constituted approximately 14% of invertebrate abundance, whilst echinoderms comprised approximately 9% invertebrate abundance (122 ± 193 and 83 ± 32 individuals per m^2, respectively), (Table 5). The percentage contributions of annelids was similar to annelid percentage contribution within the OWF sites. For crustaceans and ‘other’ taxa, percentage contributions were greater at reference stations, whilst for molluscs and echinoderms, percentage contributions were greater at OWF sites. Invertebrate density at reference Station G11 (1,373 ± 1,270 individuals per m^2) was far greater than at Station G12 (410 ± 110 individuals per m^2).

The most abundant taxon across the reference stations was a crustacean, the acorn barnacle *Balanus crenatus* (145 ± 200 individuals per m^2), followed by the echinoderm *E. pusillus* (62 ± 26 individuals per m^2) and Nematoda (53 ± 75 individuals per m^2). *A. pygmaea,* which was found with a mean density of 25 ± 22 and 22 ± 2 individuals per m^2 during the 2015 and 2020 surveys respectively, was found in similar abundances during the 2021 survey (22 ± 2 individuals per m^2).

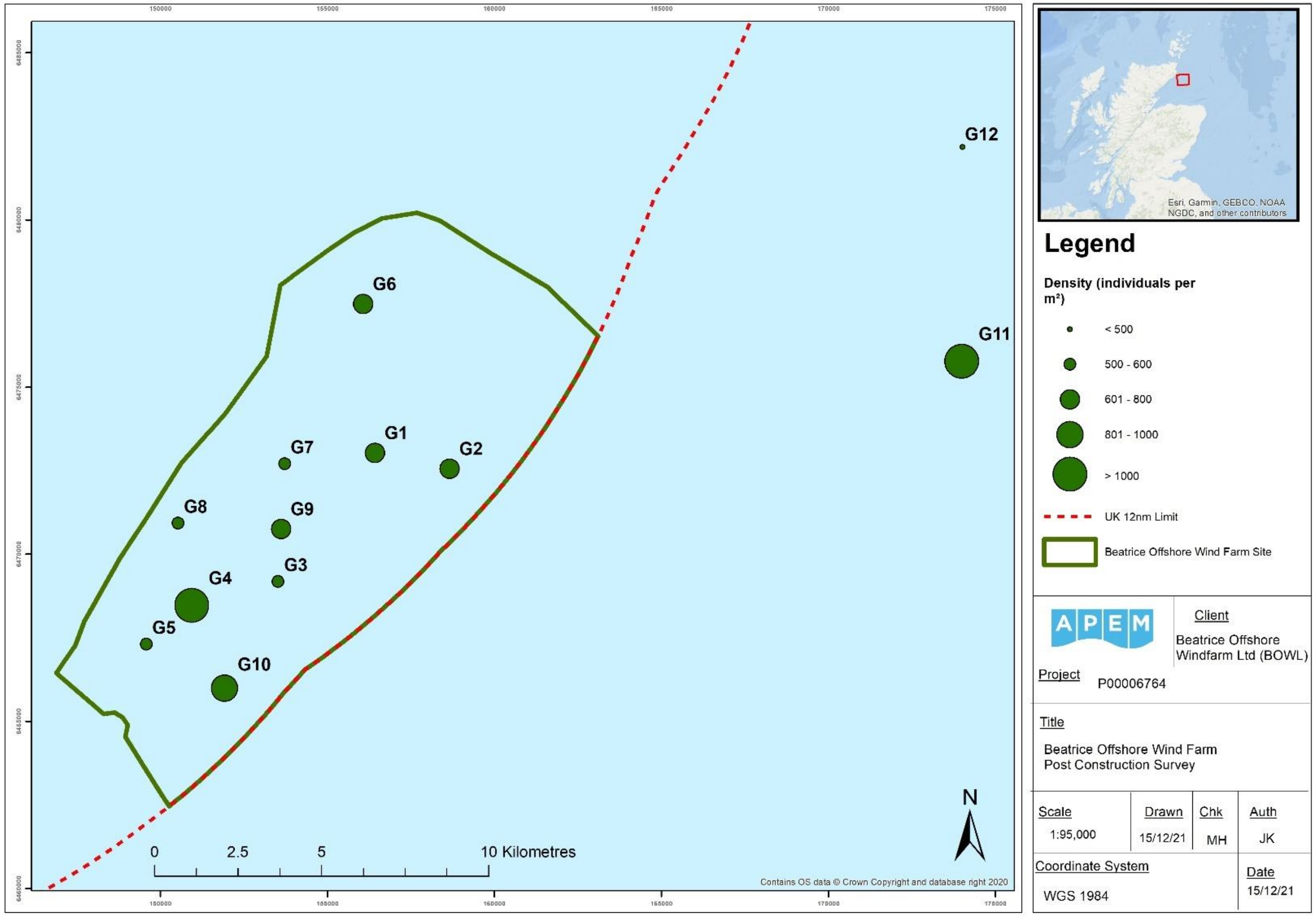

Figure 5: Density across stations (individuals m^{-2}) (mean across replicates).

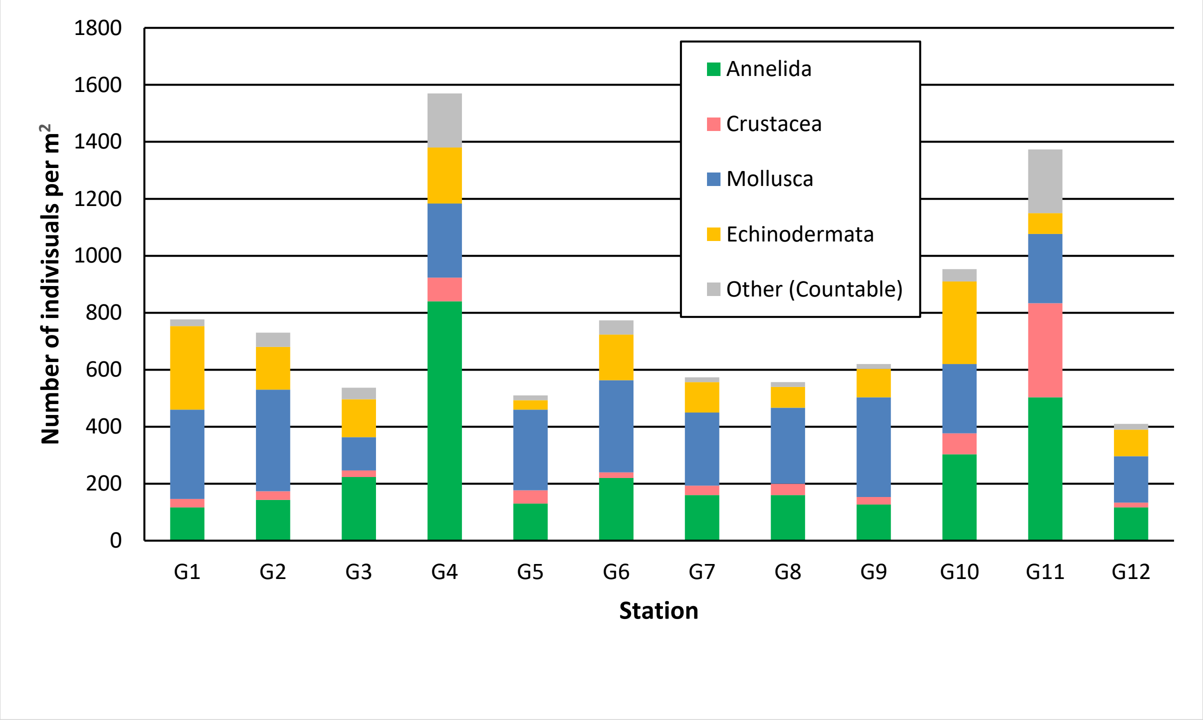

Figure 6: Density (individuals per m^2) for taxonomic groups (mean across replicates).

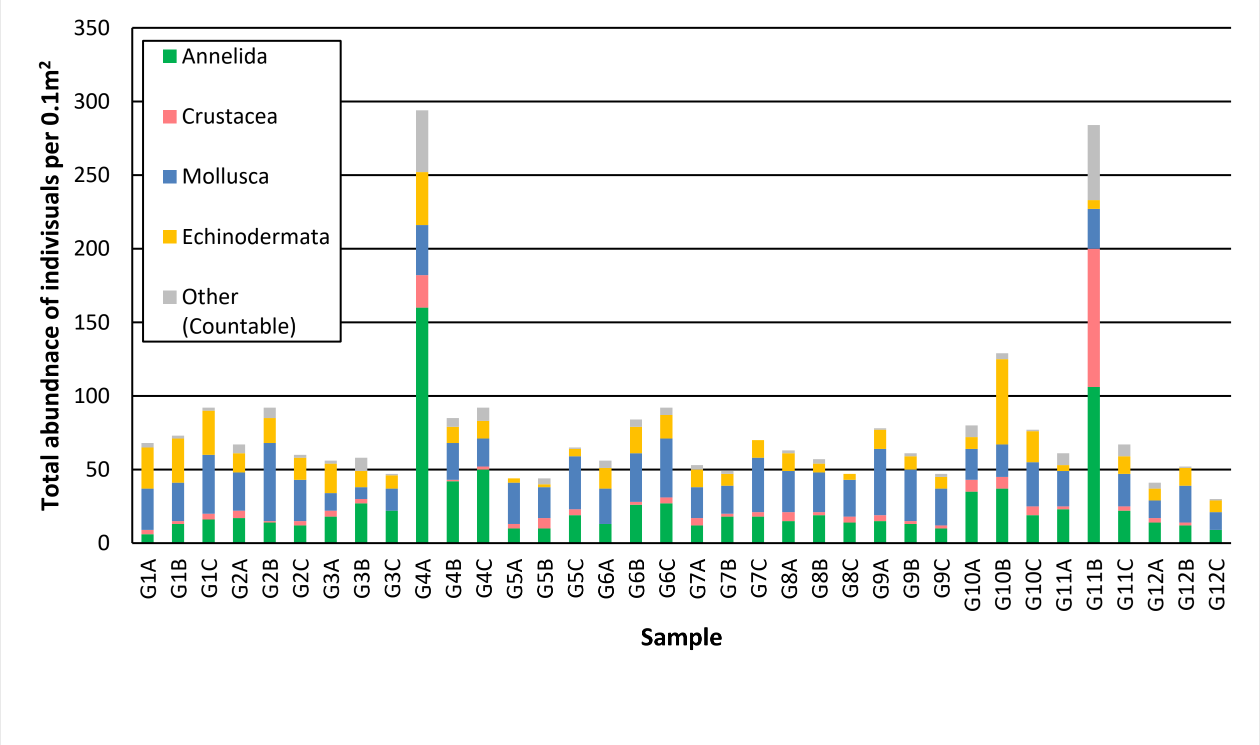

Figure 7: Density (individuals per 0.1m^2) for taxonomic groups across replicates.

Table 5: Abundance and taxon richness within taxonomic groups. SD = Standard Deviation.

Taxonomic Group	Individuals			Taxon richness	
	Total Abundance	Mean abundance (per m^2 ± SD)	Percent Contribution	Total number of taxa	Percent Contribution
OWF site					
Annelida	727	242 ± 28	31.9	86	40.4
Crustacea	122	41 ± 4	5.4	37	17.4
Mollusca	831	277 ± 10	36.4	46	21.6
Echinodermata	461	154 ± 12	20.2	9	4.2
Other (countable)	139	46 ± 8	6.1	14	6.6
Other (non-countable)	-	-	-	21	9.9
Reference stations					
Annelida	186	310 ± 372	34.8	59	46.8
Crustacea	104	173 ± 376	19.4	13	10.3
Mollusca	122	203 ± 67	22.8	26	20.6
Echinodermata	50	83 ± 32	9.3	5	4.0
Other (countable)	73	122 ± 193	13.6	10	7.9
Other (non-countable)	-	-	-	13	10.3
Total	**535**	**NA**	**100**	**126**	**100**

Table 6: Abundance, taxon richness and diversity indices within subtidal grabs. SD = Standard Deviation.

Station	Total no. taxa	Mean number of individuals per m^2 (± SD)	Mean biomass (g m-^{2} ± SD)	Shannon-Wiener Diversity	Margalef's Species Richness	Pielou's eveness	Simpson's Dominance
G1	53	777 ± 127	0.56 ± 0.44	2.57 ± 0.09	5.74 ± 0.67	0.79 ± 0.01	0.86 ± 0.01
G2	61	730 ± 168	0.38 ± 0.27	2.94 ± 0.15	6.79 ± 0.51	0.86 ± 0.03	0.93 ± 0.01
G3	63	537 ± 59	9.91 ± 14.37	2.85 ± 0.32	6.60 ± 1.40	0.86 ± 0.05	0.91 ± 0.05
G4	131	1,570 ± 1,187	3.62 ± 3.85	3.55 ± 0.38	11.14 ± 4.24	0.90 ± 0.01	0.96 ± 0.01
G5	46	510 ± 121	0.89 ± 0.86	2.84 ± 0.08	5.45 ± 0.14	0.91 ± 0.04	0.94 ± 0.02
G6	56	773 ± 189	2.31 ± 2.52	2.95 ± 0.22	6.83 ± 1.53	0.87 ± 0.003	0.93 ± 0.01
G7	50	573 ± 112	1.05 ± 0.99	2.82 ± 0.03	5.62 ± 0.37	0.89 ± 0.02	0.94 ± 0.01
G8	49	557 ± 81	0.71 ± 0.73	2.95 ± 0.21	6.21 ± 1.24	0.91 ± 0.03	0.95 ± 0.01
G9	45	620 ± 155	1.59 ± 0.99	2.70 ± 0.14	5.64 ± 1.10	0.84 ± 0.02	0.90 ± 0.01
G10	78	953 ± 292	4.96 ± 6.52	2.83 ± 0.40	7.36 ± 1.01	0.80 ± 0.09	0.88 ± 0.08
G11	108	1,373 ± 1,271	1.57 ± 1.71	3.22 ± 0.10	9.16 ± 2.46	0.87 ± 0.09	0.94 ± 0.04
G12	51	410 ± 110	0.22 ± 0.07	2.87 ± 0.26	6.01 ± 0.93	0.91 ± 0.02	0.94 ± 0.02
Min	**45**	**537**	**0.22**	**2.57**	**5.45**	**0.79**	**0.86**
Mean	**66**	**831**	**2.31**	**2.92**	**6.88**	**0.86**	**0.92**
Max	**131**	**1,570**	**9.91**	**3.55**	**11.14**	**0.91**	**0.96**
SD	**27**	**332**	**2.78**	**0.26**	**1.66**	**0.04**	**0.03**

3.2.2.2 Taxon richness

<u>*OWF site*</u>

A total of 245 taxa were recorded across the OWF site (including taxa that were non-countable). Annelids had the greatest taxon richness with 86 taxa (40% of the total taxa) followed by 46 mollusc taxa (22% of the total taxa). In common with the 2020 survey, crustaceans had a proportionally high taxon richness, with 37 taxa in total (17% of the total taxa) despite having one of the lowest total abundances (comprising 5% of invertebrates sampled in the OWF sites), (Table 5). ‘Other non-countable’ taxa comprised a total of 21 taxa (10% of the total taxa), ‘other countable’ taxa included 14 taxa (7%) and nine echinoderms were recorded (4% of the total taxa), (Table 5). More than 50 taxa were recorded at the majority of stations (total of taxa across the three replicates). The lowest number of taxa was recorded at Station G9 (45 taxa), (Table 6, Figure 8 and Figure 9). Variation in taxon richness between stations followed a similar trend to that identified for abundance of individuals with greatest taxon richness at Station G4 (142 taxa) which was primarily due to the large number of taxa recorded at replicate G4A (131 taxa), (Figure 9 and Figure 10). The higher taxonomic richness at Station G4 was due primarily to increased numbers of annelid species which also contributed to the higher abundance of individuals per m^2, as indicated above.

Reference stations

In total, 126 taxa were recorded at the two reference stations. In common with the OWF sites, annelids had the greatest taxon richness with 59 taxa (47% of the total taxa), followed by molluscs (26 taxa; 21% of the total taxa) and crustaceans and ‘non-countable’ taxa (13 taxa; 10.3% of the total taxa). In common with the pattern observed for invertebrate abundance, taxon richness was far greater at Station G11 than G12 with a total number of 108 and 51 taxa, respectively. There was greater within-station variation in taxon richness across replicates at Station G11 (34 to 77 taxa) than at Station G12 (19 to 29 taxa).

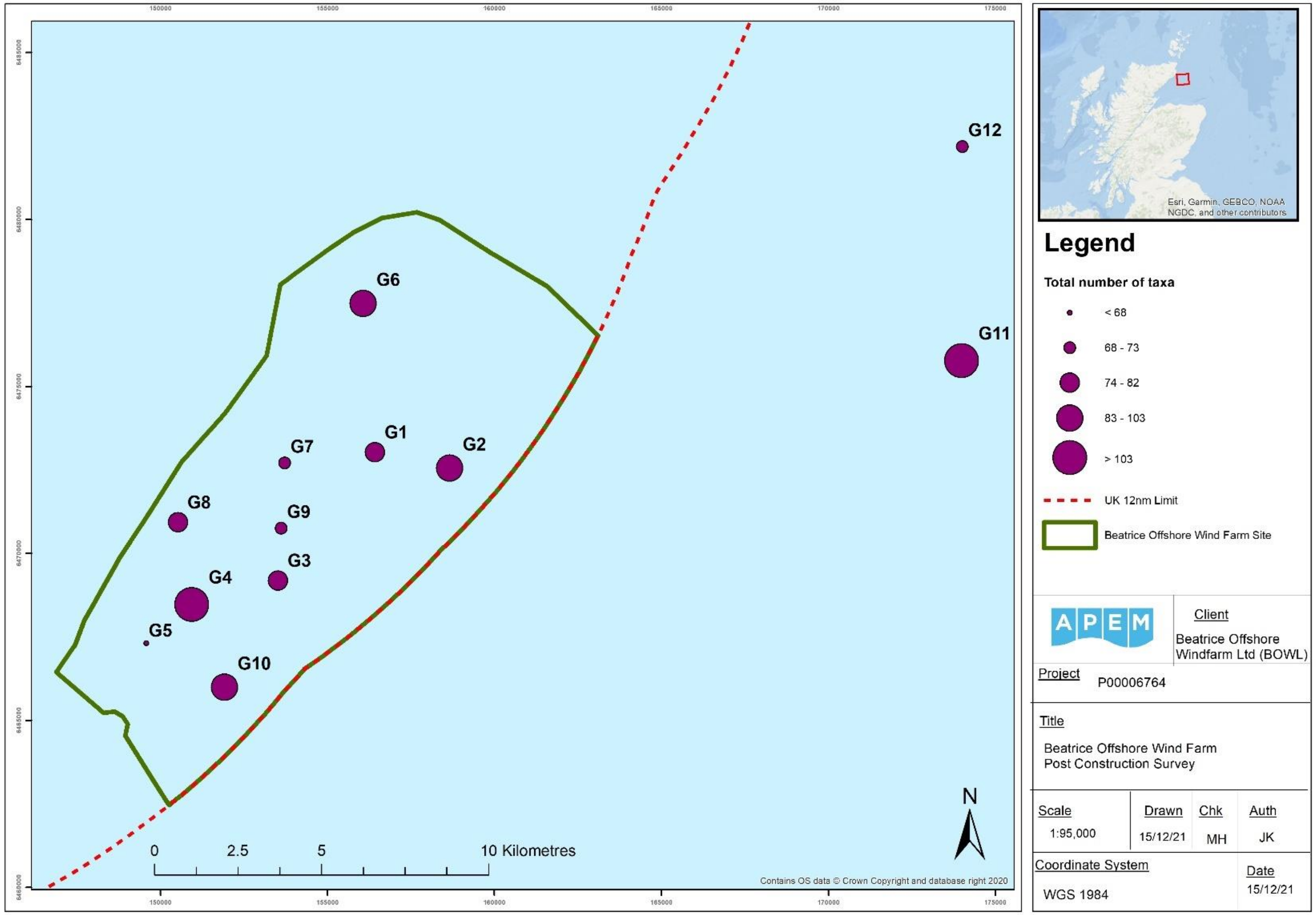

Figure 8: Number of taxa across stations (total across replicates).

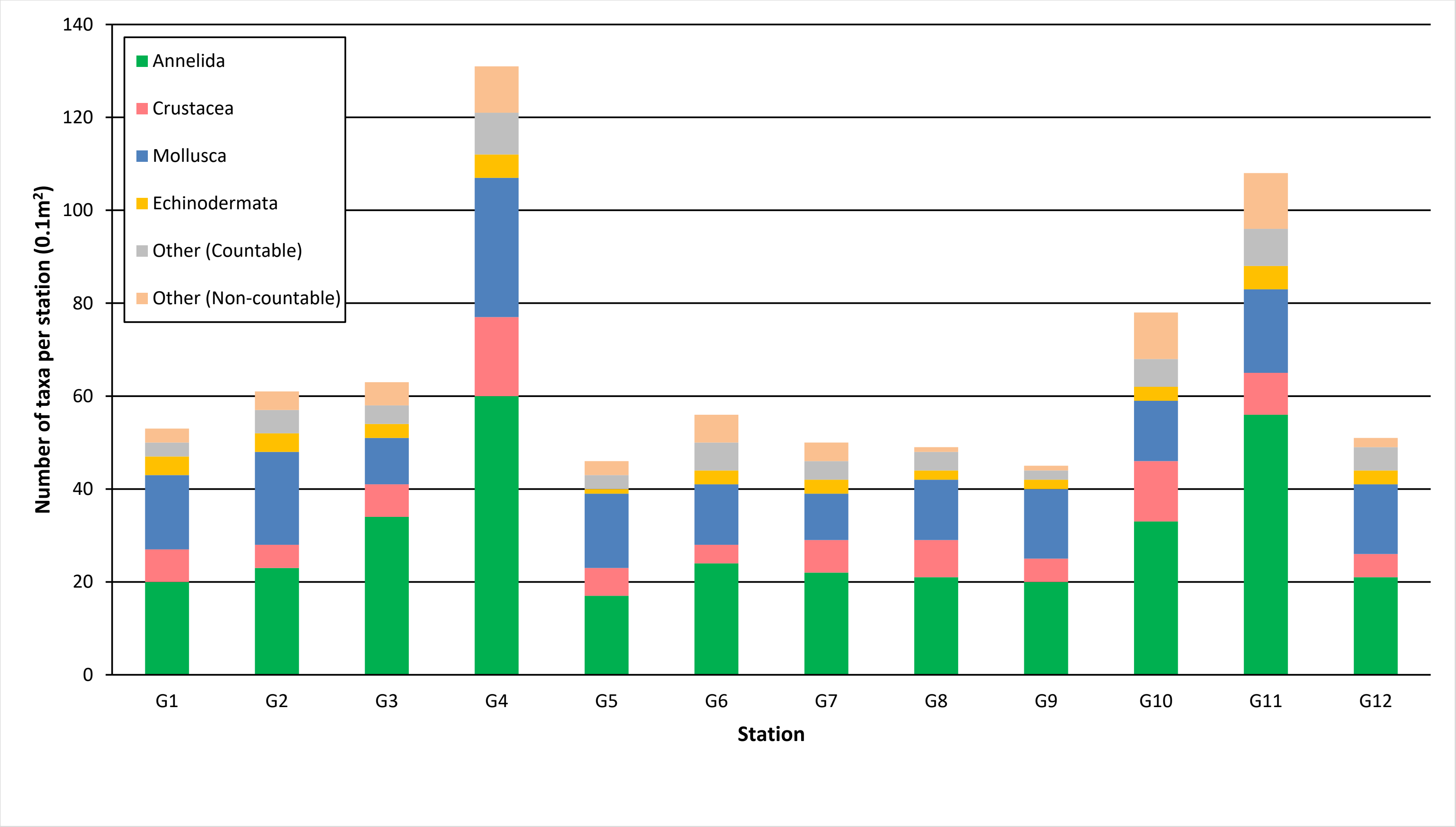

Figure 9: Taxon richness per 0.1 m^2 for taxonomic groups across stations (mean across replicates).

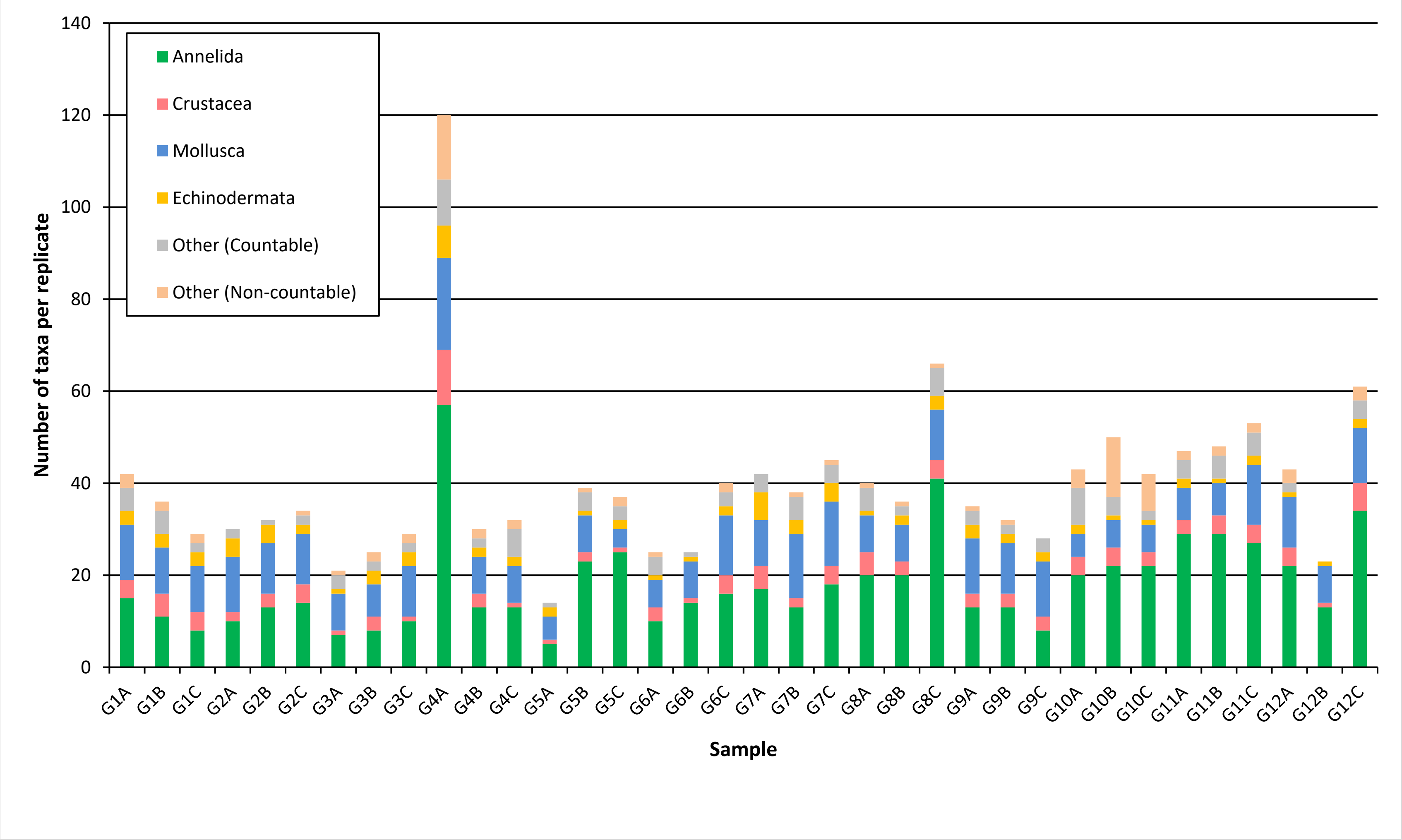

Figure 10: Taxon richness of taxonomic groups across replicates.

3.2.2.3 Diversity Indices

OWF site

Mean Shannon-Wiener diversity index ($H'(\log_e)$) values indicated that there was moderate biological diversity within the marine communities sampled across the survey stations (Table 6). Mean index values ranged between 2.57 ± 0.09 at Station G1 in the northern section of the OWF site to 3.55 ± 0.38 at Station G4 to the south of the OWF site. Diversity at Stations G2, G6 and G8 were also relatively high with mean values of 2.94 ± 0.15, 2.95 ± 0.22 and 2.95 ± 0.21, respectively. Margalef's species richness index (*d*) reflected the pattern observed for taxon richness and the Shannon-Wiener index with lower values at stations with low taxon richness and low Shannon-Wiener values.

The results for the Pielou's Evenness (*J'*) and Simpson's dominance indices indicated that the benthic communities across all survey stations were evenly distributed with little evidence of any dominant taxa (Table 6). Pielou's Evenness ranged from 0.79 ± 0.01 to 0.91 ± 0.04, (maximum potential value is 1). Similarly, Simpson's dominance index (1-λ) was high across stations (0.86 ± 0.01 to 0.96 ± 0.01, (with a maximum potential value of 1)), indicating the probability of any two individuals within a replicate being the same species was very low. Values were lowest at Station G1 which had Pielou's Evenness (*J'*) and Simpson's dominance values of 0.79 ± 0.01 and 0.86 ± 0.01, respectively, which was due to the dominance of *E. pusillus* at this station.

Reference stations

Benthic communities also had moderate biological diversity at the two reference stations. The mean of 3.22 ± 0.10 recorded for Station G11 was the second greatest Shannon-Wiener Diversity score of any of the OWF site stations while the value of 2.87 ± 0.26 recorded at G12 was higher than at a number of OWF stations (Table 6). Additionally, Margalef's species richness at Station 11 was also higher than any other OWF site.

The results of the Pielou's Evenness (*J'*) and Simpson's dominance indices indicated that the benthic communities across reference stations were evenly distributed with little evidence of any dominant taxa (Table 6). Pielou's Evenness was high at both reference stations with values of 0.87 ± 0.09 and 0.91 ± 0.02 at Stations G11 and G12, respectively. Similarly, Simpson's dominance index (1-λ) was high at both stations (0.94 at both reference stations).

These results for diversity are consistent with the results obtained for abundance and taxon richness at these stations, with high abundance and taxon diversity across Stations G11 and G12 relative to stations in the OWF site.

3.2.2.4 Biomass

The total biomass (AFDW) of countable invertebrates across the stations sampled was 8.33 g, with a mean per replicate of 0.23 ± 0.43 g (i.e. 2.3 ± 4.3 g/m^{-2}). This is similar to both the mean biomass recorded across the wider survey conducted in 2010 (mean of 2.98 g/m^{-2}), the pre-construction survey in 2015 (mean of 2.70 g/m^{-2}) and post-construction survey in 2020 (2.70 g/m^{-2}) respectively.

OWF site

Unlike biomass results recorded during the 2020 survey, mean biomass amongst stations did not corresponded with trends identified for taxon richness or abundance of individuals. For example, the highest mean biomass was recorded at Station G3 (9.91 ± 14.40 g m^{-2}) in the centre of the OWF site, approximately twice the biomass of the sampling station with the second highest biomass (G10 with 4.96 ± 6.52 g m^{-2}). However, this station had the lowest abundance and third highest biological diversity (Table 6 and Figure 11), whereas Station G4 which had both the highest abundance and biological diversity, had the third highest biomass (3.62 ± 3.85 g m^{-2}). This is largely due to the presence of the heart urchin *Echinocardium pennatifidum* (one individual at replicate G3B) and the molluscs *C. striatula* (one and two individuals at replicates G3B and G3C respectively), *Clausinella fasciata* (one individual at replicate G3B) and *Arcopagia crassa* (one individual at replicate G3A). Station G2, which was the had the lowest biomass (0.38 ± 0.27 g m^{-2}) across the OWF site, had the fifth highest abundance and fourth highest biological diversity across the OWF site.

Reference stations

Station G11, which had the second highest number of taxa and density of individuals across the whole survey area (i.e. across the OWF site and reference stations), had a mean biomass of 1.57 ± 1.71 g m^{-2} (Table 6). This was around the middle of the biomass recorded at stations in the OWF site and was lower than Stations G3, G4, G6, G9 and G10. This was largely due to large numbers of annelids within samples which only contributed a small amount to total mean biomass. Station G12, which had the fourth highest density across the whole survey area, had the lowest mean biomass of 0.22 ± 0.07 g m^{-2} which was contributed to primarily by annelids and molluscs (Table 6).

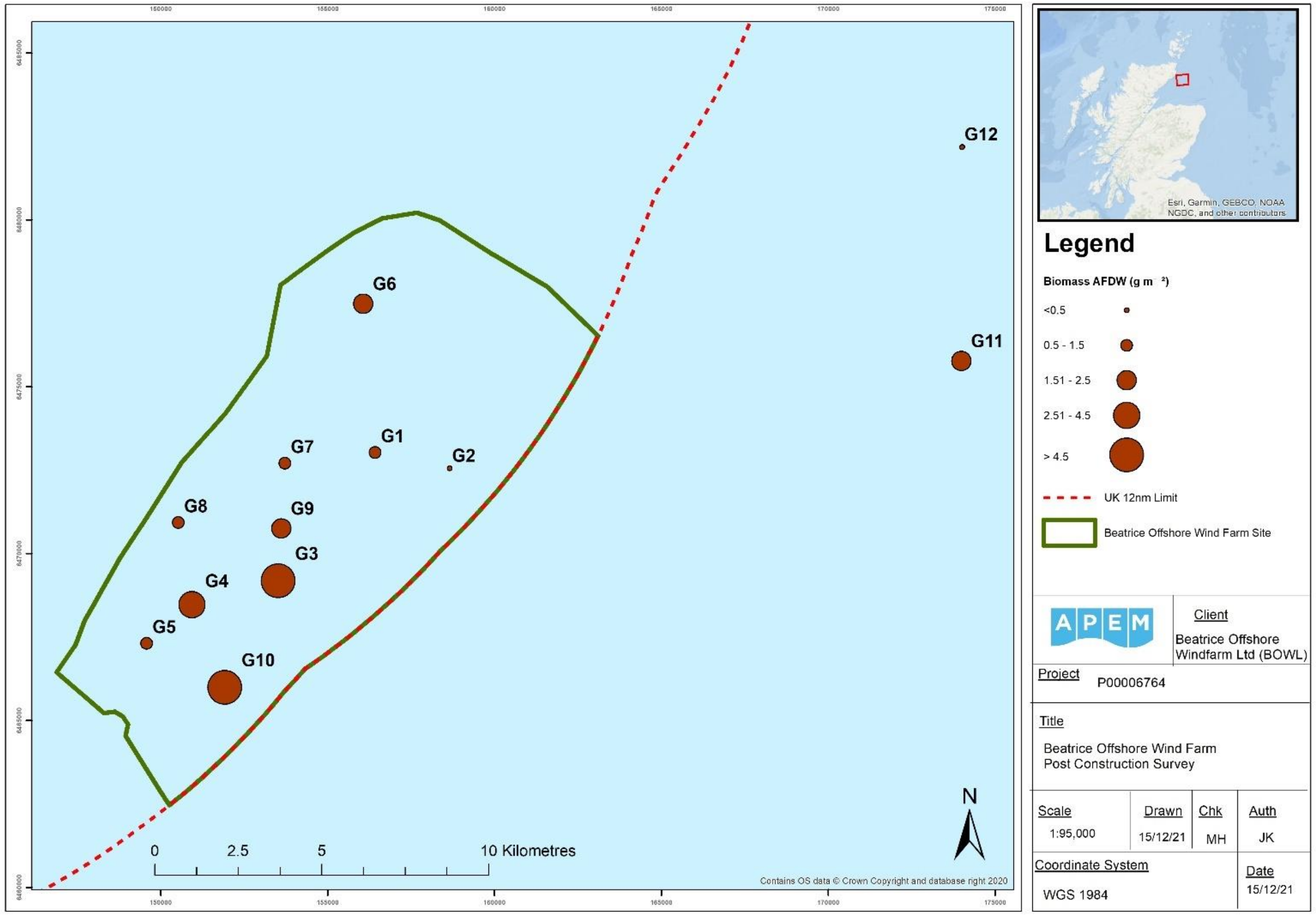

Figure 11: Invertebrate biomass (Ash Free Dry Weight) across stations (mean across replicates).

3.2.3 Cluster and Multi-Dimensional Scaling (MDS) analyses

The results of the cluster analysis are presented in the cluster dendrogram (Figure 12) and Multi-Dimensional Scaling (MDS) plot (Figure 13). Black lines denote significant structure within the group to that point and red lines connect samples that cannot be significantly differentiated at the 95% confidence interval. The SIMPROF test identified eight groups (Group a-h) that can be considered statistically distinct from one-another at the 95% confidence level.

The dendrogram derived from cluster analysis indicated 20 of the 36 replicate samples were statistically inseparable with approximately 45% similarity or greater (Group f). These comprised all three replicates at Stations G1, G5, G6, G7, G8 and G9; and one replicate at Stations G2 and G11. SIMPROF indicated that the replicates could be grouped into three clusters based on the invertebrate assemblages present (a true cluster requires three or more replicates to be grouped) (Groups b, f, and g). Additionally, of the remaining five replicates, three were each assigned to isolated groups (Groups c, d and e) and two replicates (G4A and G11B) were assigned to Group a (Figure 12). The individually isolated replicates were G4C, and the reference station replicates G11C and G12C. Replicates G4A and G11B (Group a) differed from other replicates as these replicates were associated with the highest abundances and biological diversity across the entire survey area whilst replicate G12C is likely to be isolated from other replicates as it was associated with the lowest abundance and biological diversity across the entire survey area. It is likely that replicates G4C and G11C did not differ considerably from other replicates in terms of sediment composition, taxon richness or abundance and was differentiated based on community composition (Table 7).

The accompanying MDS plot provides an alternative visualisation of the groupings observed in the cluster analysis (Figure 13). A stress value of 0.1 for an MDS plot indicates a good ordination, while 0.2 indicates a potentially useful 2-dimensional picture (Clarke & Warwick, 2001). With a stress value of 0.17, the MDS plot is considered a useful visual representation of the data.

3.2.4 ANOSIM and SIMPER: Comparison between pre- and post-construction surveys

SIMPER analysis indicated that similar species were present across the 2015 pre-construction and 2021 post-construction surveys with the main differences being changes in relative abundance, and average dissimilarity between the pre- and post-construction data was 66.87% (Appendix 11). This observation was also supported by the low R value of 0.245 indicated by ANOSIM (Appendix 12).

3.2.5 Biotope assignment

SIMPER analysis indicated the main species driving the differences between SIMPROF groupings (SIMPER outputs are provided in Appendix 9) and a combination of SIMPER outputs and the abundance of different taxa within replicates were considered when assigning biotopes to each replicate. Biotopes were assigned according to EUNIS (EEA 2019) and notes made on any variations to the standard descriptions (Table 7).

The prefix ‘c.f.’ to the biotopes code has been used to indicate biotopes that are closest to a particular described biotope but not necessarily an exact fit. Two biotopes and variant of one of the biotopes were assigned based on the SIMPROF groups and the most abundant taxa within replicates (Table 7).

‘*Echinocyamus pusillus*, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand’ (SS.SSa.CFiSa.EpusOborApri; EUNIS code: A5.251), (referred to as the EpusOborApri biotope) was the most the dominant biotope across the survey area. The biotope was assigned to all three replicates at nine of the stations (G1, G2, G3, G5, G6, G7, G8 G9 and G12) in addition to one replicate at Station G4 and two replicates at station G11, which were represented by SIMPROF groups b, c, d, f and g (Table 7). This biotope is characterised by *E. pusillus*, *A. prismatica* and the polychaete *O. borealis* and largely found throughout the central and northern North Sea (Tillin 2016). SIMPER analysis indicated that *E. pusillus* drove SIMPROF groupings for groups b, f and g. There was only one replicate assigned to groups c and d so no SIMPER outputs are available.

SIMPROF group e (containing Station G4C) was assigned to a variation of the biotope EpusOborApri, indicated by the prefix ‘c.f.’ in Table 7. No SIMPER outputs are available for group e, as only one replicate assigned to the group. However, it was noted that although this group consisted of species typical of EpusOborApri, the polychaete *Capitella* sp. was the most abundant taxon in the sample (which is not typical of this biotope).

The only other biotope recorded was Circalittoral mixed sediment (SS.SMx.CMx; A5.44) which was assigned to two replicates (G4A and G11B; SIMPROF group a). The biotope is highly variable and as result a variety of communities develop including infaunal polychaetes, bivalves, echinoderms and burrowing anemones. No SIMPER outputs are available for this group, as only one replicate was assigned to the group, but the assignment of the biotope was driven by large numbers of *B. crenatus* (Table 7).

From a conservation perspective it is noted that EpusOborApri is a component of the Scottish PMF: ‘Offshore subtidal sands and gravels’ (SNH 2014).

A RELATE test between the environmental and faunal data indicated a fairly strong correlation (Rho 0.642, Significance level (p) <0.1%) between the multivariate patterns observed in the sediment data and in the faunal communities. The full results of the RELATE test are presented in Appendix 10. Similarly, the BIO-ENV outputs indicated that a fairly strong and significant correlation between the faunal communities and different sediment types (Global test: Rho 0.701, Significance level (p) <1%). Results indicate that it is the amount of very coarse sand that is having most effect on the biological data (Appendix 10). Consequently, the results indicate that sediment type is likely to be influencing biotic assemblages and the biotopes present.

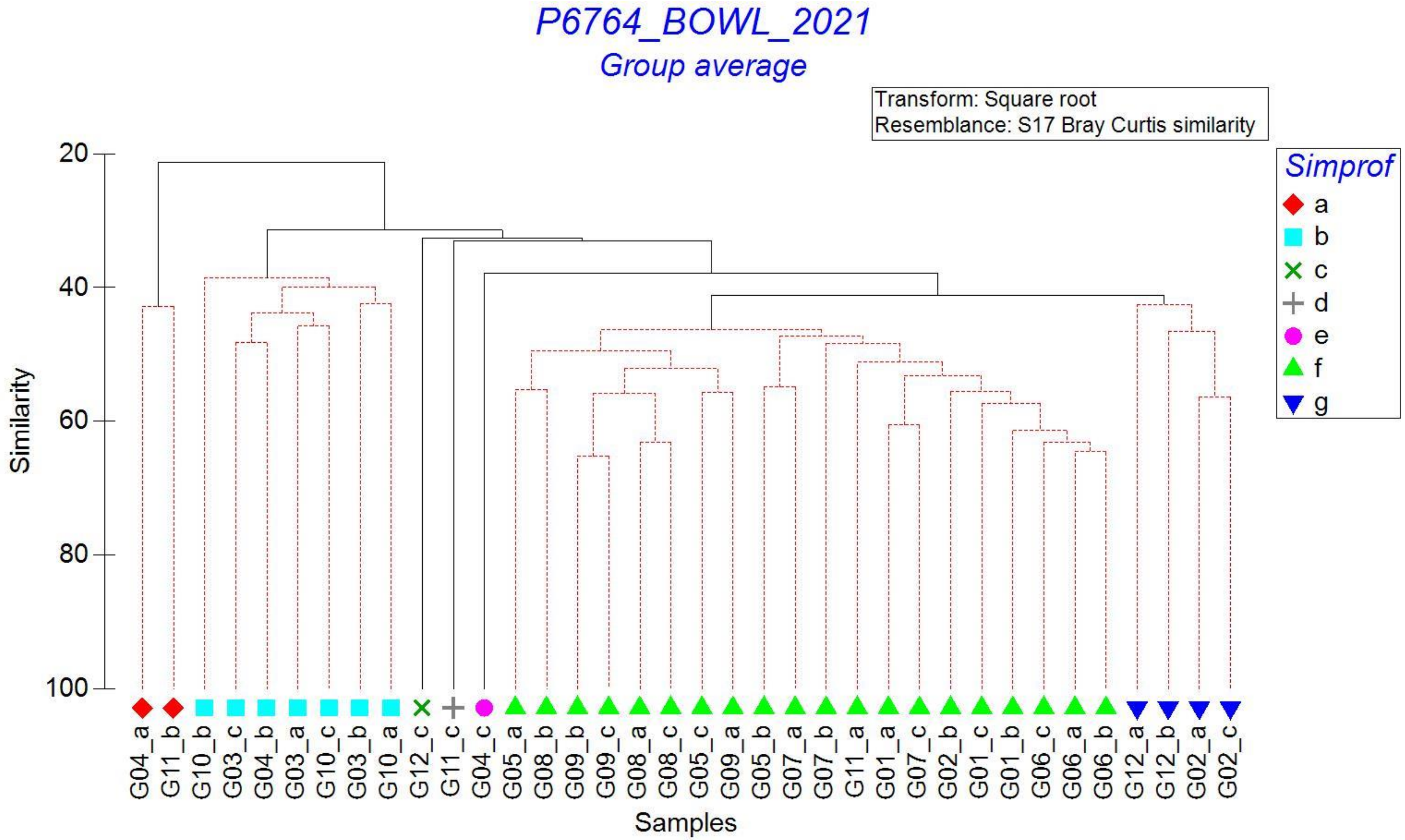

Figure 12: SIMPROF cluster dendrogram based on the square root transformed abundance data for each replicate.

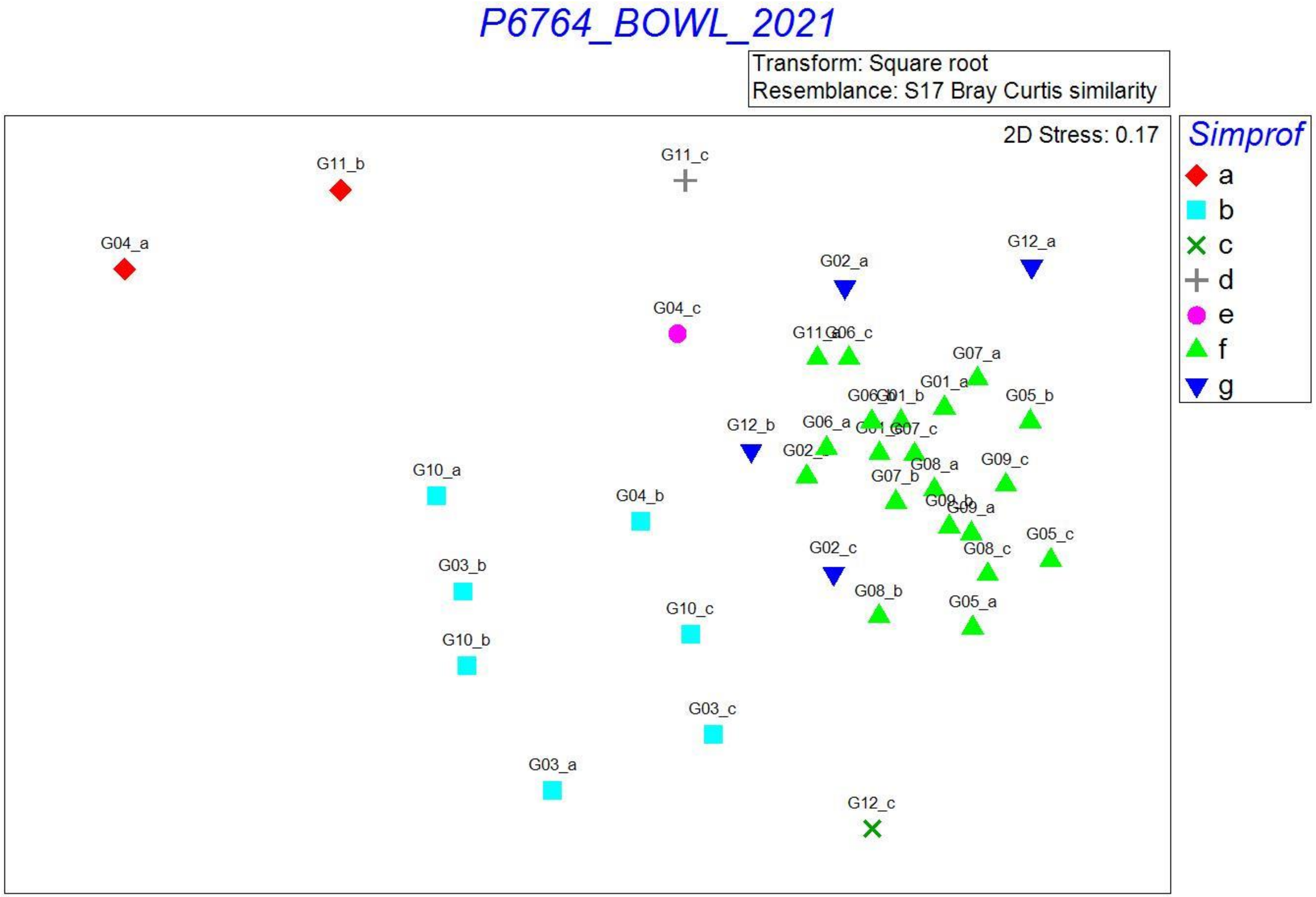

Figure 13: 2D Multidimensional Scaling (MDS) ordination based on the square root transformed infaunal abundance data for each replicate.

Table 7: Biotopes allocated to each SIMPROF group with sample replicates and descriptions.

Biotope with EUNIS and JNCC codes	SIMPROF group	Replicates allocated	Description and information to allocate biotope type
Circalittoral mixed sediment. A5.44 **SS.SMx.CMx**	a	G4A, G11B	Group a (2 samples); Within-group similarity = 42.81%. Includes a combination of biota that can be assigned at biotope complex level but does not fit any described biotope. Large numbers of *Balanus crenatus* are associated with the gravel component in the sediment. Group contains rich infauna including large numbers of several species (e.g. *Aponuphis bilineata*) that have not previously been noted as characterising any biotope.
Echinocyamus pusillus, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand. A5.251 **SS.SSa.CFiSa.EpusOborApri**	b	G3A, G3B, G3C, G4B, G10A, G10B, G10C	Group b (7 samples); Within group similarity = 41.04%.
	c	G12C	Group c (1 sample); Within group similarity = not applicable.
	d	G11C	Group d (1 sample); Within group similarity = not applicable.
	f	G1A, G1B, G1C, G2B, G5A, G5B, G5C, G6A, G6B, G6C, G7A, G7B, G7C, G8A, G8B, G8C, G9A, G9B, G9C, G11A	Group f (20 samples); Within group similarity = 49.13%.
	g	G2A, G2C, G12A, G12B	Group g (4 samples); Within group similarity = 46.15%.

Biotope with EUNIS and JNCC codes	SIMPROF group	Replicates allocated	Description and information to allocate biotope type
Echinocyamus pusillus, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand. A5.251 **c.f. SS.SSa.CFiSa.EpusOborApri**	e	G4C	Group e (1 sample); Within group similarity = not applicable. c.f. Includes some species more often found in muddier sediments (e.g. *Scoloplos armiger*, *Lanice conchilega*), therefore not an exact match SS.SSa.CFiSa.EpusOborApri. Possibly transitional with SS.SSa.CMuSa (but not matching any described biotopes within the complex), as well as a few epifaunal species, suggesting transition with SS.SMx.CMx.

4. Summary and Discussion

The results of this report provide a robust additional post-construction dataset for sediment composition and biota for comparison with the outputs of previous pre- and post-construction sampling. Stations sampled during this survey were also sampled during the previous post-construction survey (APEM 2021), the 2015 pre-construction survey (BOWL 2015) and the 2010 EIA characterisation surveys (CMACS 2011). Sampling was also conducted using the same methodologies to ensure compatibility of results across surveys.

4.1 Sediment composition

Overall, sediments were relatively homogenous across the OWF site and were predominately sandy. Within the OWF site, Sand was recorded across 19 replicates at seven of the 10 stations. Of these, all three replicates at Stations G1, G2, G6, G7 and G9 were classified as Sand. Slightly Gravelly Sand was recorded at all three replicates at station G10, two replicates at Stations G3 and G4; and one replicate at Stations G5 and G8. Gravelly Sand was recorded at one of the replicates at Stations G3 and G4. At the two reference stations G11 and G12, sediment was slightly coarser than most stations within the OWF site with the majority of replicates classified as Slightly Gravelly Sand (three replicates), followed by Gravelly Sand (two replicates) and Sand (one replicate).

The results of the PSA were similar to the 2010 site characterisation survey for the EIA and 2015 pre-construction survey. Seven and eight of the stations were classed as Sand following the 2010 and 2015 surveys, respectively (i.e. two or more of the replicates at these stations had this classification) in comparison to seven stations during the 2021 survey (Stations G1, G2, G5, G6, G7, G8 and G9). However, this is unlike PSA results recorded during the 2020 post-construction survey (APEM 2021), for which sediment type was generally coarser than during the pre-construction surveys and 2021 survey (only three stations were classed as Sand during the 2020 survey.

At the reference stations (G11 and G12) sediment was classed as Slightly Gravelly Sand for three of the six replicates in the 2021 survey with Gravelly Sand and Sand allocated to two replicates and one replicate, respectively. This is consistent with the 2015 survey reference station results and sediment at these stations was slightly coarser in 2020 with five of the six replicates classed as Gravelly Sand.

4.2 Community composition

There was a biologically diverse community across the survey area, with a total of 245 taxa recorded across the 12 stations, of which 26 were non-countable. There was some variation between stations in terms of both abundance and numbers of taxa, and trends in abundance across stations were found to reflect trends in taxon richness. The only species found with a conservation designation was the bivalve *A. islandica*, a Scottish PMF which is also on the OSPAR list of threatened and/or declining species and habitats. A total of five *A. islandica* individuals were recorded across the survey and they were all juveniles. This is consistent with the three juvenile *A. islandica* recorded during the 2010 EIA characterisation survey, the nine juvenile *A. islandica* recorded during the 2015 pre-construction survey and the 12 juvenile *A. islandica* recorded during the 2020 post-construction survey (CMACS 2011, BOWL 2015, APEM 2021). During the 2021 survey, a total of three non-native species were identified across the stations: The polychaete *G. gracilis* was recorded at Stations G3, G10 and G11; the amphipod *M.* sextonae was recorded at Station G7 and the Japanese skeleton shrimp *C. mutica* was recorded at Station G12. One species considered to be cryptogenic (i.e. that are neither demonstrably native nor non-native) was recorded (the crustacean *C. crassicorne*). No non-native species and two cryptogenic species were recorded in 2020.

The most abundant taxon across the OWF during the current survey was the pea urchin *E. pusillus*, which was recorded at all OWF stations in high numbers compared to other taxa. *E. pusillus* is a species of sand dollar commonly found off all British costs within the sublittoral zone to more than 200 m depth with a preference for medium to coarse-grained sand and sediments with a low mud content (maximum 10%) (Lumbis 2008, Kroh & Mooi 2021). *E. pusillus* was also recorded in far lower numbers during the 2010 EIA characterisation survey, the 2015 pre-construction survey and the 2020 post-construction survey (CMACS 2011, BOWL 2015, APEM 2021), (Table 8). Other abundant taxa recorded during the current survey included the molluscs *C. praetenue* (which was the most abundant species in samples collected during the 2015 pre-construction and 2020 post-construction surveys), *Asbjornsenia pygmaea* (formerly known as *Morella pygmaea*), *Spisula* sp. and *Abra prismatica*.

During the current survey, a single individual of the heart urchin *Echinocardium pennatifidum* at Station G3 contributed to the highest biomass across the whole OWF (2.06 g). This was followed by the mollusc *C. praetenue* and the razor shell *Ensis magnus* which contributed to the second and third highest biomass levels (0.72 g and 0.70 g respectively).

In 2020, taxon richness and abundance of invertebrates was similar between references stations (APEM 2021). This was not the case in 2021, however, with a large variation in taxon richness and abundance across these stations, which was consistent with the 2015 survey results. It is not clear if this change could be partly associated with the fact that in 2015 and 2021 there was a very slight increase in the percentage of mud and slightly less percentage of gravel at Station G11 compared to G12, while in 2020 percentages of mud and sand were similar at the two stations.

Across the OWF site and reference stations, molluscs and annelid polychaetes were the most abundant and species rich taxonomic groups during the current survey which was consistent with the 2010 EIA characterisation survey, 2015 pre-construction survey and the 2020 post-construction survey (CMACS 2011, BOWL 2015, APEM 2021). Gage (2001) found that polychaetes consistently dominated soft bottom benthos from continental shelves to abyssal plains and revealed that over 50% of total macrofaunal individuals are generally composed of polychaete worms. The density of key polychaete species during the current post-construction survey was similar to the 2015 pre-construction survey; however, density of these species has reduced slightly in comparison to the post-construction survey conducted in 2020 (Table 8).

In terms of molluscs, mean density of *C. praetenue* and *A. pygmaea* in 2021 is generally consistent with the 2015 and 2020 surveys. Fluctuations in density are evident for *A. prismatica* for which data indicate an almost six-fold increase in density compared to 2020, although mean density was greatest in 2015, and low numbers were recorded in 2010.

A notable difference between surveys is the changes in density of the echinoderm *E. pusillus* with a three-fold increase in 2021 compared to 2015 and a six-fold increase compared to 2020 (Table 8).

Overall, the results suggest that in broad terms there has been a degree of change in terms of the main substrate type at stations between the 2020 and 2021 post-construction surveys in addition to changes in the abundances of key taxa, with the 2021 density data for some key taxa having greater similarity to the 2015 pre-construction survey data than the 2020 survey data. This has resulted in a change in the dominant biotope assigned to stations as indicated below.

Table 8: Comparison of abundance of key taxa between the 2010 EIA characterisation survey, the 2015 pre-construction survey the 2020 post-construction survey and the 2021 post-construction survey. SD = Standard Deviation.

Taxon	Number of individuals m^{-2} (mean across stations ± SD)							
	OWF site				Reference stations			
	2021	2020	2015	2010	2021	2020	2015	2010
Polychaeta								
Spiophanes bombyx	8 ± 8	14 ± 9	20 ± 18	82 ± 55	8 ± 7	8 ± 2	12 ± 17	20 ± 14
Ophelia borealis	22 ± 11	59 ± 26	19 ± 13	46 ± 33	12 ± 12	17 ± 14	0	0
Glycera lapidum agg.	9 ± 17	14 ± 19	5 ± 9	18 ± 23	12 ± 2	17 ± 0	15 ± 17	35 ± 35
Hydroides norvegica	4 ± 11	11 ± 27	0	6 ± 13	0	0	0	5 ± 7
Mollusca								
Abra prismatica	33 ± 19	6 ± 7	50 ± 40	6 ± 8	40 ± 38	5 ± 7	112 ± 50	0
Cochlodesma praetenue	64 ± 46	69 ± 63	83 ± 47	30 ± 27	35 ± 7	27 ± 19	27 ± 14	0
Asbjorsenia pygmaea	41 ± 36	40 ± 52	43 ± 31	61 ± 46	22 ± 2	22 ± 3	25 ± 21	5 ± 7
Echinodermata								
Echinocyamus pusillus	139 ± 79	23 ± 16	45 ± 20	25 ± 26	61 ± 26	5 ± 7	48 ± 50	10 ± 0

4.3 Biotopes

All sample stations were assigned to the biotope '*Moerella* spp. with venerid bivalves in Atlantic infralittoral gravelly sand' (MoeVen) (A5.133) following the 2010 EIA characterisation survey (CMACS). This was reduced to just three stations based on the 2015 pre-construction survey samples but MoeVen was found to be the dominant biotope during the 2020 post-construction survey (BOWL 2015, APEM 2021). During this 2021 post-construction survey, however, MoeVen was not assigned to any of the sample stations.

During the current survey the most dominant biotope was '*Echinocyamus pusillus*, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand' (EpusOborApri) (A5.251), which was also found to be the most dominant biotope during the 2015 pre-construction survey. For the current survey this biotope was assigned to all three replicates at stations G1-G3, G5-G10 and G12, one replicate at Station G4 and two replicates at Station G11. The only other biotope assigned following the 2021 survey was 'Circalittoral mixed sediment' (A5.44) which was allocated to one replicate each at Stations G4 and G11.

The change in dominant biotope apparent across the OWF site is reflected by the change at the reference stations with five of the six replicates allocated to a variant of the MoeVen biotope following the 2020 survey, and five of the replicates were allocated the EpusOborApri biotope based on samples from the current survey. In 2015 five of the reference station replicates were allocated to a variant of the EpusOborApri biotope (BOWL 2015).

Although the status of the MoeVen biotope was the main focus of the survey as indicated in Section 1.1.2, due to it being a component biotope of the Scottish PMF 'Tide-swept coarse sands with burrowing bivalves', it should be noted that the EpusOborApri biotope is a component biotope of the Scottish PMF 'Offshore subtidal sands and gravels' and is therefore also of marine nature conservation importance in Scottish territorial waters (SNH 2014). Additionally, EpusOborApri is very similar to the MoeVen biotope and may contain similar species such as *A. pygmaea* and *G. lapidum* which were noted as some of the most abundant taxa within samples.

The differences in biotopes allocated between the 2020 and 2021 post-construction surveys are likely to be due primarily to changes in the relative abundances of the key taxa, which is likely to be due to natural variability and changes in sediment composition. For instance, one of the most notable differences between the 2020 post-construction survey and the current post-construction survey was that during the current survey *E. pusillus* was recorded at every station within every replicate and at particularly high abundances in comparison to other taxa (Table 8). Similarly, other taxa such as *A. prismatica* and *O. borealis* also occurred in a greater number of stations and replicates compared to the survey in 2020 which resulted in the allocation of the EpusOborApri biotope to many of the replicate samples in 2021 (which was also the case in 2015). Results from ANOSIM between the 2015 pre- and 2021 post-construction data matrices suggested that there is a large overlap of species between these surveys (indicated by a low R value of 0.245) and the main differences are related to the relative abundances of the species (Appendix 12, Table 8).

The results of the RELATE and BIO-ENV tests between environmental and faunal data indicate a fairly strong and significant correlation between the multivariate patterns observed in the sediment data and between faunal communities (Appendix 10). This suggests that sediment composition is a factor affecting benthic communities, particularly the amount of very coarse sand present.

Overall, the current monitoring survey indicates that there has been a shift in the dominant biotope from MoeVen during the 2020 survey to EpusOborApri during the 2021 survey, with no replicates assigned to the MoeVen biotope in 2021, which is more consistent with the results of the 2015 pre-construction survey. This shift is apparent in the OWF site and at the reference stations. Data to date suggest that biotopes at the site are mainly transitional between the MoeVen and EpusOborApri biotopes and the benthic communities and associated sediment types naturally fluctuate between these biotopes. Based on monitoring to date there is no evidence that the Beatrice OWF development has had an impact on the MoeVen biotope beyond changes due to natural variation.

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6. Appendices

Appendix 1 Target and Actual Sampling Locations

Station	Sample	Water Depth	Target		Actual	
			Lat.	Long.	Lat.	Long.
G1	A	39	58.26368	-2.86042	58.26373	-2.86035
G1	B	39	58.26368	-2.86042	58.26345	-2.86025
G1	C	39	58.26368	-2.86042	58.26353	-2.86033
G2	A	46	58.26118	-2.82176	58.26122	-2.82188
G2	B	46	58.26118	-2.82176	58.26105	-2.82173
G2	C	46	58.26118	-2.82176	58.26108	-2.82172
G3	A	40	58.22705	-2.90382	58.227	-2.90372
G3	B	40	58.22705	-2.90382	58.2269	-2.90398
G3	C	40	58.22705	-2.90382	58.22705	-2.90388
G4	A	42	58.21863	-2.94655	58.21852	-2.94638
G4	B	42	58.21863	-2.94655	58.21895	-2.946
G4	C	42	58.21863	-2.94655	58.21848	-2.94588
G5	A	38	58.20719	-2.96782	58.20727	-2.96797
G5	B	38	58.20719	-2.96782	58.20718	-2.96783
G5	C	38	58.20719	-2.96782	58.20737	-2.97763
G6	A	53	58.30321	-2.87294	58.30305	-2.87163
G6	B	53	58.30321	-2.87294	58.30313	-2.87245
G6	C	53	58.30321	-2.87294	58.3033	-2.87342
G7	A	48	58.25871	-2.90571	58.25847	-2.90555
G7	B	48	58.25871	-2.90571	58.2587	-2.90582
G7	C	48	58.25871	-2.90571	58.25865	-2.90578
G8	A	39	58.24029	-2.95722	58.20443	-2.95712
G8	B	39	58.24029	-2.95722	58.20447	-2.95712
G8	C	39	58.24029	-2.95722	58.2104	-2.95728
G9	A	43	58.24115	-2.90464	58.24097	-2.90505
G9	B	43	58.24115	-2.90464	58.24103	-2.90457
G9	C	43	58.24115	-2.90464	58.24123	-2.9044
G10	A	40	58.19725	-2.92615	56.19743	-2.92593
G10	B	40	58.19725	-2.92615	58.1975	-2.92547
G10	C	40	58.19725	-2.92615	58.198	-2.92665
G11	A	51	58.30155	-2.56621	58.3012	-2.56643
G11	B	51	58.30155	-2.56621	58.30185	-2.56582
G11	C	52	58.30155	-2.56621	58.30133	-2.5663
G12	A	45	58.35889	-2.57487	58.35875	-2.5745
G12	B	45	58.35889	-2.57487	58.35883	-2.57557
G12	C	45	58.35889	-2.57487	58.35842	-2.57502

Appendix 2 Field Sampling Logsheets

Station	Attempt	Sample	Position (WGS84)		Date	Time (BST)	Recorded depth (m)	Grab volume	Notes
			Latitude	Longitude					
G1	1	G1A	58.26373	-2.86035	16/06/2021	13:20	39	7L	Sand
G1	2	G1B	58.26345	-2.86025	16/06/2021	13:30	39	8.5L	Sand
G1	3	G1C	58.26353	-2.86033	16/06/2021	13:38	39	6L	Sand
G2	1	G2A	58.26122	-2.82188	16/06/2021	12:43	46	7L	Sand
G2	2	G2B	58.26105	-2.82173	16/06/2021	12:53	46	8L	Sand
G2	3	G3C	58.26108	-2.82172	16/06/2021	13:00	46	8L	Sand
G3	1	G3A	58.22700	-2.90372	17/06/2021	08:55	40	7L	Sand
G3	2	G3B	58.22690	-2.90398	17/06/2021	09:03	40	7L	Sand
G3	3	G3C	58.22705	-2.90388	17/06/2021	09:11	40	6L	Sand
G4	1	G4A	58.21852	-2.94638	17/06/2021	09:38	42	7.5L	Gravelly Sand & Slightly Muddy
G4	2	G4B	58.21895	-2.94600	17/06/2021	09:48	42	7L	Gravelly Sand
G4	3	G4C	58.21848	-2.94588	17/06/2021	09:54	42	6.5L	Gravelly Sand
G5	1	G5A	58.20727	-2.96797	17/06/2021	11:37	38	5L	Sand
G5	2	G5B	58.20718	-2.96783	17/06/2021	11:44	38	5.5L	Sand
G5	3	G5C	58.20737	-2.97763	17/06/2021	11:53	38	6L	Sand
G6	1	G6A	58.30305	-2.87163	16/06/2021	14:50	53	5L	Sand
G6	2	G6B	58.30313	-2.87245	16/06/2021	15:00	53	6L	Sand
G6	3	G6C	58.30330	-2.87342	16/06/2021	15:07	53	7L	Sand
G7	1	G7A	58.25847	-2.90555	16/06/2021	14:00	48	7L	Sand

Station	Attempt	Sample	Position (WGS84)		Date	Time (BST)	Recorded depth (m)	Grab volume	Notes
			Latitude	Longitude					
G7	2	G7B	58.25870	-2.90582	16/06/2021	14:10	48	6.5L	Sand
G7	3	G7C	58.25865	-2.90578	16/06/2021	14:18	48	5L	Sand
G8	1	G8A	58.20443	-2.95712	17/06/2021	11:06	39	6.5L	Sand
G8	2	G8B	58.20447	-2.95712	17/06/2021	11:12	39	6L	Sand
G8	3	G8C	58.21040	-2.95728	17/06/2021	11:21	39	6L	Sand
G9	1	G9A	58.24097	-2.90505	17/06/2021	08:20	43	7L	Sand
G9	2	G9B	58.24103	-2.90457	17/06/2021	08:29	43	7L	Sand
G9	3	G9C	58.24123	-2.90440	17/06/2021	08:38	43	7L	Sand
G10	1	G10A	56.19743	-2.92593	17/06/2021	10:31	40	6.5L	Gravelly Sand
G10	2	G10B	58.19750	-2.92547	17/06/2021	10:38	40	6.5L	Gravelly Sand
G10	3	G10C	58.19800	-2.92665	17/06/2021	10:48	40	7L	Gravelly Sand
G11	1	G11A	58.30120	-2.56643	16/06/2021	11:07	51	5.5L	Sand
G11	2	G11B	58.30185	-2.56582	16/06/2021	11:18	51	8.5L	Gravelly Sand
G11	3	G11C	58.30133	-2.56630	16/06/2021	11:35	52	6.5L	Sand
G12	1	Failed	58.35940	-2.57393	16/06/2021	08:45	40	-	Empty
G12	2	G12A	58.35875	-2.57450	16/06/2021	09:00	45	5L	Gravelly Sand
G12	3	Failed	58.35873	-2.57503	16/06/2021	09:15	45	2.5L	Too Small
G12	4	Failed	58.35863	-2.57453	16/06/2021	09:28	45	2.5L	Too Small
G12	5	Failed	58.35853	-2.57490	16/06/2021	09:39	45	-	Misfire
G12	6	Failed	58.35857	-2.57535	16/06/2021	09:49	45	2.5L	Too Small
G12	7	G12B	58.35883	-2.57557	16/06/2021	09:58	45	5L	Gravelly Sand

Station	Attempt	Sample	Position (WGS84)		Date	Time (BST)	Recorded depth (m)	Grab volume	Notes
			Latitude	Longitude					
G12	8	Failed	58.35907	-2.57557	17/06/2021	10:11	45	-	Empty
G12	9	Failed	58.35852	-2.57558	18/06/2021	10:20	45	2.5L	Too Small
G12	10	G12C	58.35842	-2.57502	19/06/2021	10:29	45	4.5L	Gravelly Sand with stones

Appendix 3 Raw PSA Data

Sample ID	Project No.	Date Sampled	Visual Description	Folk (1954) classification	BSG Modified Folk (1954) classification based in Long (2006)	Statistics calculated using Folk and Ward (1957) formulae							
						Mean (µm)	(description)	Sorting (phi)	(description)	Skewness (phi)	(description)	Kurtosis (phi)	(description)
G_01_A	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	280.2	Medium Sand	0.740	Moderately Sorted	-0.147	Coarse Skewed	1.345	Leptokurtic
G_01_B	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	282.4	Medium Sand	0.739	Moderately Sorted	-0.155	Coarse Skewed	1.361	Leptokurtic
G_01_C	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	274.2	Medium Sand	0.738	Moderately Sorted	-0.164	Coarse Skewed	1.356	Leptokurtic
G_02_A	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	359.3	Medium Sand	0.816	Moderately Sorted	-0.023	Symmetrical	1.273	Leptokurtic
G_02_B	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	308.6	Medium Sand	0.763	Moderately Sorted	-0.069	Symmetrical	1.151	Leptokurtic
G_02_C	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	330.7	Medium Sand	0.831	Moderately Sorted	-0.120	Coarse Skewed	1.148	Leptokurtic
G_03_A	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Slightly Gravelly Sand	697.4	Coarse Sand	0.883	Moderately Sorted	-0.055	Symmetrical	0.927	Mesokurtic
G_03_B	P6764	17/06/2021	Sand with lots of shell fragments	Gravelly Sand	Gravelly Sand	819.1	Coarse Sand	1.043	Poorly Sorted	-0.072	Symmetrical	0.925	Mesokurtic
G_03_C	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Slightly Gravelly Sand	477.1	Medium Sand	0.909	Moderately Sorted	-0.223	Coarse Skewed	1.127	Leptokurtic
G_04_A	P6764	17/06/2021	Sand with lots of shell fragments	Gravelly Sand	Gravelly Sand	669.5	Coarse Sand	1.496	Poorly Sorted	0.181	Fine Skewed	1.346	Leptokurtic
G_04_B	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Slightly Gravelly Sand	515.1	Coarse Sand	0.988	Moderately Sorted	-0.237	Coarse Skewed	1.059	Mesokurtic
G_04_C	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Slightly Gravelly Sand	383.1	Medium Sand	0.911	Moderately Sorted	-0.233	Coarse Skewed	1.330	Leptokurtic
G_05_A	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Slightly Gravelly Sand	369.3	Medium Sand	0.695	Moderately Well Sorted	-0.238	Coarse Skewed	1.277	Leptokurtic
G_05_B	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	329.8	Medium Sand	0.580	Moderately Well Sorted	-0.099	Symmetrical	1.086	Mesokurtic
G_05_C	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	335.8	Medium Sand	0.574	Moderately Well Sorted	-0.072	Symmetrical	1.085	Mesokurtic
G_06_A	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	299.9	Medium Sand	0.665	Moderately Well Sorted	0.045	Symmetrical	1.192	Leptokurtic
G_06_B	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	299.2	Medium Sand	0.667	Moderately Well Sorted	0.041	Symmetrical	1.182	Leptokurtic
G_06_C	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	295.8	Medium Sand	0.709	Moderately Sorted	0.035	Symmetrical	1.226	Leptokurtic
G_07_A	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	294.5	Medium Sand	0.722	Moderately Sorted	-0.087	Symmetrical	1.211	Leptokurtic
G_07_B	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	357.5	Medium Sand	0.839	Moderately Sorted	-0.122	Coarse Skewed	1.311	Leptokurtic
G_07_C	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	314.3	Medium Sand	0.792	Moderately Sorted	-0.097	Symmetrical	1.240	Leptokurtic
G_08_A	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	337.7	Medium Sand	0.564	Moderately Well Sorted	-0.124	Coarse Skewed	1.133	Leptokurtic
G_08_B	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Slightly Gravelly Sand	416.1	Medium Sand	0.761	Moderately Sorted	-0.224	Coarse Skewed	1.220	Leptokurtic
G_08_C	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	326.3	Medium Sand	0.535	Moderately Well Sorted	-0.098	Symmetrical	1.099	Mesokurtic
G_09_A	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	347.3	Medium Sand	0.864	Moderately Sorted	-0.210	Coarse Skewed	1.249	Leptokurtic
G_09_B	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	301.5	Medium Sand	0.754	Moderately Sorted	-0.170	Coarse Skewed	1.321	Leptokurtic
G_09_C	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	298.8	Medium Sand	0.643	Moderately Well Sorted	-0.061	Symmetrical	1.139	Leptokurtic
G_10_A	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Slightly Gravelly Sand	599.2	Coarse Sand	0.877	Moderately Sorted	-0.071	Symmetrical	0.978	Mesokurtic
G_10_B	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Slightly Gravelly Sand	600.1	Coarse Sand	0.892	Moderately Sorted	-0.055	Symmetrical	0.985	Mesokurtic
G_10_C	P6764	17/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Slightly Gravelly Sand	612.5	Coarse Sand	0.830	Moderately Sorted	-0.136	Coarse Skewed	0.965	Mesokurtic
G_11_A	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Slightly Gravelly Sand	394.2	Medium Sand	0.929	Moderately Sorted	-0.183	Coarse Skewed	1.252	Leptokurtic
G_11_B	P6764	16/06/2021	Sand with lots of shell fragments	Gravelly Sand	Gravelly Sand	813.6	Coarse Sand	1.447	Poorly Sorted	-0.168	Coarse Skewed	2.109	Very Leptokurtic
G_11_C	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Sand	362.1	Medium Sand	1.022	Poorly Sorted	-0.094	Symmetrical	1.253	Leptokurtic
G_12_A	P6764	16/06/2021	Sand with a few shell fragments	Slightly Gravelly Sand	Slightly Gravelly Sand	431.4	Medium Sand	1.067	Poorly Sorted	-0.211	Coarse Skewed	1.073	Mesokurtic
G_12_B	P6764	16/06/2021	Sand with lots of shell fragments	Gravelly Sand	Gravelly Sand	857.8	Coarse Sand	2.016	Very Poorly Sorted	-0.504	Very Coarse Skewed	1.472	Leptokurtic
G_12_C	P6764	16/06/2021	Sand with lots of shell fragments	Slightly Gravelly Sand	Slightly Gravelly Sand	537.1	Coarse Sand	1.013	Poorly Sorted	-0.205	Coarse Skewed	1.023	Mesokurtic

Sample ID	Primary Mode (µm)	d10 (µm)	d50 (µm)	d90 (µm)	Gravel (>2 mm) (%)	Sand (63-2000 µm) (%)	Mud (<63 µm) (%)	V Coarse Gravel (32-64 mm) (%)	Coarse Gravel (16-32 mm) (%)	Medium Gravel (8-16 mm) (%)	Fine Gravel (4-8 mm) (%)	V Fine Gravel (2-4 mm) (%)	V Coarse Sand (1-2 mm) (%)	Coarse Sand (500-1000 µm) (%)
G_01_A	301.8	153.7	273.3	522.9	0.2	98.0	1.7	0.0	0.0	0.0	0.0	0.2	4.0	6.4
G_01_B	301.8	158.0	275.3	532.7	0.1	98.3	1.6	0.0	0.0	0.0	0.0	0.1	4.1	6.5
G_01_C	301.8	148.8	265.7	513.8	0.2	98.2	1.7	0.0	0.0	0.0	0.1	0.1	3.8	6.4
G_02_A	426.8	183.1	360.5	702.1	0.6	98.1	1.3	0.0	0.0	0.2	0.0	0.3	4.8	18.4
G_02_B	301.8	167.2	306.3	632.5	0.1	98.5	1.4	0.0	0.0	0.0	0.0	0.1	3.7	12.3
G_02_C	301.8	173.0	318.4	726.7	0.1	98.6	1.3	0.0	0.0	0.0	0.0	0.1	4.7	15.6
G_03_A	603.6	320.2	678.7	1589.7	3.6	95.9	0.5	0.0	0.0	0.3	0.5	2.8	24.6	41.4
G_03_B	603.6	342.6	799.0	1998.1	10.0	89.5	0.5	0.0	0.0	0.3	2.3	7.3	29.3	34.7
G_03_C	426.8	239.5	436.5	1231.0	1.2	97.7	1.1	0.0	0.0	0.0	0.1	1.1	12.7	25.5
G_04_A	853.6	177.5	715.8	1925.5	8.8	86.2	5.0	0.0	0.4	0.5	2.2	5.7	25.6	31.5
G_04_B	426.8	243.5	461.6	1426.5	3.6	95.4	1.0	0.0	0.7	0.6	0.8	1.6	14.0	26.6
G_04_C	301.8	194.4	359.1	1036.5	2.5	95.9	1.6	0.0	0.0	0.7	0.7	1.0	8.0	16.5
G_05_A	301.8	213.1	350.5	718.6	1.7	98.3	0.0	0.0	1.1	0.2	0.1	0.3	4.0	15.2
G_05_B	301.8	201.2	326.7	584.7	0.3	99.7	0.0	0.0	0.0	0.0	0.2	0.1	2.1	11.5
G_05_C	301.8	202.4	333.5	592.6	0.2	98.7	1.2	0.0	0.0	0.0	0.1	0.1	2.1	12.4
G_06_A	301.8	171.8	303.2	496.7	0.8	97.4	1.8	0.0	0.0	0.3	0.2	0.3	1.7	7.1
G_06_B	301.8	170.8	302.2	496.9	0.3	97.8	1.9	0.0	0.0	0.0	0.1	0.2	2.3	6.9
G_06_C	301.8	158.2	298.8	508.0	0.4	97.3	2.3	0.0	0.0	0.0	0.1	0.3	3.1	6.8
G_07_A	301.8	166.0	290.2	563.4	0.1	98.2	1.7	0.0	0.0	0.0	0.0	0.1	3.2	8.8
G_07_B	301.8	186.3	346.8	784.4	0.5	98.1	1.3	0.0	0.0	0.0	0.2	0.3	6.0	16.8
G_07_C	301.8	172.1	309.1	661.5	0.2	97.9	1.9	0.0	0.0	0.0	0.1	0.1	4.5	12.1
G_08_A	301.8	209.1	332.3	588.9	0.3	99.7	0.0	0.0	0.0	0.0	0.1	0.2	2.5	11.2
G_08_B	426.8	238.8	395.5	930.2	1.2	98.8	0.0	0.0	0.0	0.4	0.2	0.6	7.5	20.9
G_08_C	301.8	205.3	322.5	512.4	0.4	99.6	0.0	0.0	0.0	0.2	0.0	0.2	2.2	7.9
G_09_A	301.8	184.6	324.6	834.9	0.4	97.9	1.8	0.0	0.0	0.0	0.2	0.2	6.7	15.4
G_09_B	301.8	179.4	295.0	615.0	0.3	98.4	1.3	0.0	0.0	0.0	0.1	0.2	4.9	8.2
G_09_C	301.8	181.5	295.8	513.1	0.1	98.5	1.4	0.0	0.0	0.0	0.0	0.1	2.1	8.2
G_10_A	603.6	279.6	582.5	1341.4	1.9	97.4	0.7	0.0	0.0	0.2	0.6	1.1	17.9	40.1
G_10_B	603.6	276.4	582.9	1347.7	1.4	97.3	1.3	0.0	0.0	0.0	0.2	1.2	18.9	39.4
G_10_C	603.6	296.3	580.3	1362.6	1.1	98.2	0.7	0.0	0.0	0.1	0.3	0.8	18.6	40.6
G_11_A	301.8	193.1	370.5	1019.5	1.4	96.8	1.8	0.0	0.0	0.1	0.4	0.9	8.8	19.2
G_11_B	853.6	310.4	808.9	3121.4	11.4	86.5	2.2	0.0	4.6	2.4	2.3	2.1	24.2	43.0
G_11_C	301.8	159.5	343.1	954.3	0.5	96.3	3.2	0.0	0.0	0.0	0.1	0.4	8.5	18.7
G_12_A	301.8	188.0	388.8	1285.1	2.2	96.6	1.2	0.0	0.0	0.0	0.7	1.5	12.7	20.3
G_12_B	426.8	250.6	582.8	25006.6	17.5	81.6	0.8	0.0	14.8	0.1	1.0	1.6	15.3	23.4
G_12_C	426.8	247.2	485.6	1482.5	4.3	94.4	1.4	0.0	3.0	0.2	0.4	0.7	15.0	28.8

Sample ID	Medium Sand (250-500 µm) (%)	Fine Sand (125-250 µm) (%)	V Fine Sand (63-125 µm) (%)	V Coarse Silt (31-63 µm) (%)	Coarse Silt (16-31 µm) (%)	Medium Silt (8-16 µm) (%)	Fine Silt (4-8 µm) (%)	V Fine Silt (2-4 µm) (%)	Clay (<2 µm) (%)	Percentages of the distribution in each 'half-phi' size interval, expressed in µm									
										>63000	45000 to 63000	31500 to 45000	22400 to 31500	16000 to 22400	11200 to 16000	8000 to 11200	5600 to 8000	4000 to 5600	2800 to 4000
G_01_A	47.7	37.5	2.5	0.3	0.3	0.2	0.2	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
G_01_B	48.2	37.1	2.2	0.3	0.3	0.2	0.1	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_01_C	45.1	40.1	2.8	0.4	0.2	0.2	0.1	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
G_02_A	53.6	19.3	2.0	0.3	0.2	0.2	0.1	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1
G_02_B	51.2	28.9	2.3	0.3	0.2	0.2	0.1	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_02_C	49.2	26.8	2.2	0.3	0.2	0.1	0.1	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_03_A	26.9	2.8	0.2	0.1	0.1	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.3	0.9
G_03_B	23.2	2.2	0.2	0.1	0.1	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	1.5	2.6
G_03_C	49.6	9.1	0.8	0.2	0.2	0.2	0.1	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.3
G_04_A	19.2	7.7	2.2	0.9	1.1	1.3	0.8	0.3	0.5	0.0	0.0	0.0	0.0	0.4	0.2	0.3	0.7	1.5	2.6
G_04_B	45.2	9.1	0.5	0.2	0.2	0.1	0.1	0.0	0.4	0.0	0.0	0.0	0.0	0.7	0.0	0.6	0.3	0.5	0.7
G_04_C	52.2	18.2	1.0	0.3	0.3	0.3	0.2	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.4	0.3	0.5
G_05_A	62.3	16.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.2	0.0	0.1	0.1
G_05_B	64.6	20.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
G_05_C	65.6	17.7	0.8	0.2	0.2	0.1	0.1	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
G_06_A	60.5	25.4	2.7	0.4	0.3	0.3	0.2	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.1	0.1
G_06_B	59.9	25.9	2.7	0.4	0.3	0.3	0.2	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
G_06_C	57.5	26.9	3.1	0.5	0.4	0.4	0.2	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
G_07_A	52.0	31.9	2.2	0.3	0.3	0.3	0.2	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_07_B	53.4	20.3	1.7	0.3	0.2	0.2	0.1	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
G_07_C	52.0	27.0	2.2	0.4	0.3	0.3	0.2	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
G_08_A	67.5	18.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
G_08_B	59.0	11.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.2	0.3
G_08_C	69.3	19.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1
G_09_A	50.2	24.3	1.2	0.3	0.4	0.3	0.2	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
G_09_B	52.4	31.7	1.2	0.2	0.2	0.2	0.1	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
G_09_C	57.0	30.0	1.3	0.2	0.2	0.2	0.1	0.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_10_A	34.2	4.9	0.3	0.1	0.1	0.1	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.5
G_10_B	33.8	4.7	0.5	0.2	0.3	0.2	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.5
G_10_C	35.6	3.2	0.2	0.1	0.1	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3
G_11_A	50.4	16.8	1.6	0.4	0.3	0.3	0.2	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.4
G_11_B	14.4	3.8	1.1	0.4	0.5	0.5	0.3	0.1	0.3	0.0	0.0	0.0	3.4	1.2	1.5	1.0	1.4	0.9	1.1
G_11_C	44.8	21.4	2.9	0.6	0.6	0.6	0.4	0.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
G_12_A	42.8	19.5	1.4	0.2	0.2	0.1	0.1	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.7
G_12_B	33.9	8.4	0.7	0.2	0.1	0.1	0.1	0.0	0.3	0.0	0.0	0.0	14.8	0.0	0.0	0.1	0.4	0.6	0.5
G_12_C	41.8	8.2	0.6	0.2	0.3	0.3	0.1	0.1	0.4	0.0	0.0	0.0	0.0	3.0	0.0	0.2	0.2	0.2	0.3

Sample ID	Percentages of the distribution in each 'half-phi' size interval, expressed in µm																			
	2000 to 2800	1400 to 2000	1000 to 1400	710 to 1000	500 to 710	355 to 500	250 to 355	180 to 250	125 to 180	90 to 125	63 to 90	44.19 to 63	31.25 to 44.19	22.097 to 31.25	15.625 to 22.097	11.049 to 15.625	7.813 to 11.049	5.524 to 7.813	3.906 to 5.524	2.762 to 3.906	1.953 to 2.762
G_01_A	0.1	2.0	2.0	1.9	4.4	15.7	32.0	27.9	9.6	2.0	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1
G_01_B	0.1	1.8	2.3	2.3	4.3	15.7	32.5	28.0	9.1	1.8	0.5	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
G_01_C	0.1	1.6	2.2	2.3	4.1	14.3	30.8	29.2	10.9	2.2	0.7	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
G_02_A	0.2	2.0	2.8	4.4	14.0	27.8	25.9	14.0	5.3	1.6	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
G_02_B	0.0	1.4	2.3	3.3	9.0	21.6	29.6	21.4	7.5	1.8	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
G_02_C	0.0	1.1	3.6	5.7	10.0	21.1	28.1	19.9	6.9	1.8	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
G_03_A	1.9	10.0	14.6	19.2	22.2	17.8	9.1	2.4	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_03_B	4.7	14.6	14.7	16.6	18.1	15.3	7.8	1.9	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_03_C	0.8	6.3	6.4	8.6	16.9	26.9	22.7	7.8	1.3	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
G_04_A	3.2	11.2	14.4	16.1	15.4	11.7	7.4	4.9	2.8	1.5	0.7	0.5	0.5	0.5	0.6	0.7	0.6	0.5	0.3	0.2	0.1
G_04_B	0.8	6.7	7.3	9.6	17.0	24.9	20.2	7.7	1.4	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
G_04_C	0.5	3.8	4.2	5.3	11.3	24.1	28.1	15.0	3.3	0.7	0.3	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.0
G_05_A	0.2	1.1	2.9	4.5	10.7	28.2	34.1	14.8	1.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_05_B	0.1	0.0	2.1	2.8	8.7	27.6	37.0	18.3	2.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_05_C	0.0	0.0	2.1	2.8	9.5	29.2	36.5	15.9	1.8	0.6	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
G_06_A	0.1	0.0	1.6	1.4	5.7	24.5	36.0	19.5	5.9	2.2	0.5	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
G_06_B	0.1	0.0	2.3	1.3	5.6	24.3	35.5	19.9	6.0	2.2	0.6	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
G_06_C	0.2	1.2	1.9	1.5	5.3	23.0	34.6	20.0	6.8	2.5	0.6	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
G_07_A	0.0	1.1	2.2	2.6	6.1	19.1	32.9	24.5	7.4	1.7	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
G_07_B	0.2	2.5	3.4	5.1	11.8	25.1	28.3	15.7	4.6	1.3	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
G_07_C	0.1	2.1	2.4	3.7	8.5	21.2	30.9	20.6	6.4	1.7	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
G_08_A	0.1	0.0	2.5	2.7	8.5	29.1	38.4	16.4	1.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_08_B	0.3	3.3	4.2	6.2	14.7	30.1	28.9	10.1	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_08_C	0.1	0.0	2.1	1.5	6.4	28.8	40.4	18.1	1.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_09_A	0.1	2.8	3.9	5.7	9.7	20.1	30.1	19.8	4.6	0.9	0.3	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0
G_09_B	0.1	2.2	2.7	2.5	5.7	19.3	33.0	25.3	6.4	0.8	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
G_09_C	0.1	0.0	2.1	2.4	5.8	21.1	35.9	24.4	5.5	0.9	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
G_10_A	0.6	6.7	11.2	17.7	22.4	21.5	12.7	4.1	0.8	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_10_B	0.7	7.2	11.6	17.4	22.0	21.5	12.3	3.9	0.8	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
G_10_C	0.5	8.0	10.5	16.6	24.0	23.5	12.1	2.8	0.5	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_11_A	0.5	4.3	4.6	6.5	12.8	23.7	26.7	13.6	3.2	1.1	0.4	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0
G_11_B	1.0	7.8	16.4	23.6	19.3	9.7	4.6	2.4	1.4	0.8	0.4	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.1	0.1	0.0
G_11_C	0.3	3.7	4.9	7.1	11.6	20.1	24.6	15.8	5.6	2.1	0.8	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1
G_12_A	0.8	6.1	6.6	7.8	12.5	20.4	22.4	14.6	4.9	1.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
G_12_B	1.1	7.6	7.7	9.3	14.1	18.6	15.3	6.7	1.7	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_12_C	0.4	6.8	8.2	11.0	17.8	23.5	18.3	6.8	1.4	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0

Sample ID	Percentages of the distribution in each 'half-phi' size interval, expressed in µm											
	1.381 to 1.953	0.977 to 1.381	0.691 to 0.977	0.488 to 0.691	0.345 to 0.488	0.244 to 0.345	0.173 to 0.244	0.122 to 0.173	0.086 to 0.122	0.061 to 0.086	0.043 to 0.061	0.01 to 0.043
G_01_A	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_01_B	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_01_C	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_02_A	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
G_02_B	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_02_C	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
G_03_A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_03_B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_03_C	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_04_A	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_04_B	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_04_C	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
G_05_A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_05_B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_05_C	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
G_06_A	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_06_B	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_06_C	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_07_A	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_07_B	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
G_07_C	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_08_A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_08_B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_08_C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_09_A	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_09_B	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_09_C	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_10_A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_10_B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_10_C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_11_A	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
G_11_B	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_11_C	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
G_12_A	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
G_12_B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G_12_C	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix 4 Raw Macrobiota Data

Code	Station		G_01_a	G_01_b	G_01_c	G_02_a	G_02_b	G_02_c	G_03_a	G_03_b	G_03_c	G_04_a	G_04_b	G_04_c	G_05_a	G_05_b	G_05_c	G_06_a	G_06_b	G_06_c	G_07_a	G_07_b	G_07_c	G_08_a	G_08_b	G_08_c	G_09_a	G_09_b	G_09_c	G_10_a	G_10_b	G_10_c	G_11_a	G_11_b	G_11_c	G_12_a	G_12_b	G_12_c
	Taxa	Notes																																				
-	Animalia	eggs	P	P	P	P	P	-	-	P	-	P	P	P	-	P	-	P	P	P	P	P	P	P	-	-	-	-	-	P	-	-	P	P	P	P	P	-
A5050	Folliculinidae		P	P	P	-	P	-	P	P	P	P	P	P	-	P	P	P	P	P	-	P	P	P	-	-	P	-	P	P	P	P	P	P	P	-	-	-
C0475	Cliona		-	-	-	-	P	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-
D0157	Euphysa aurata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D0246	Bougainvilliidae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D0287	Merona cornucopiae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-
D0424	Hydrallmania falcata		-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D0433	Sertularia		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D0462	Nemertesia		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-
D0632	Cerianthus lloydii	juvenile	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
D0759	Edwardsiidae		-	1	-	-	-	-	-	-	-	-	2	2	-	3	-	2	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
F0001	Platyhelminthes		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	5	-	-	-	-
G0001	Nemertea		3	1	1	-	1	Frag.	-	1	-	3	-	1	-	-	-	1	1	3	1	-	-	2	-	-	-	2	2	2	-	-	2	2	-	1	-	-
G0039	Cerebratulus		-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-
G0107	Oerstedia		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
G0133	Tetrastemma robertianae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
HD0001	Nematoda		-	-	-	2	1	1	-	1	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	1	28	3	-	-	-
K0030	Loxosomella murmanica		-	-	-	-	-	-	-	P	-	P	-	P	-	P	-	P	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	P	-	-	-	-
N0025	Nephasoma minutum		-	-	-	-	2	-	-	-	-	19	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N0034	Phascolion strombus		-	-	-	3	3	-	1	7	1	17	3	3	-	1	-	1	-	2	1	-	-	-	-	-	-	-	-	4	-	1	4	15	3	-	1	-
N0047	Aspidosiphon muelleri		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0015	Pisione remota		-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	-	1	-	-	-	-
P0049	Gattyana cirrhosa		-	-	-	-	-	-	-	-	-	1	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	3	1	-	-	-
P0050	Malmgrenia darbouxi		-	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0055	Malmgrenia castanea		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0062	Harmothoe glabra		1	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	1	-	-	-	1	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-
P0066	Malmgrenia ljungmani		-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-
P0070	Malmgrenia mcintoshi		-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0092	Pholoe baltica (sensu Petersen)		-	-	-	-	1	-	-	-	-	1	-	1	-	-	-	-	-	Frag.	-	-	-	-	-	-	1	-	-	-	-	-	-	-	Frag.	-	-	-
P0094	Pholoe inornata (sensu Petersen)		-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-
P0109	Sthenelais limicola		-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-
P0118	Eteone longa	aggregate	-	-	-	-	-	-	-	1	-	6	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
P0122	Hesionura elongata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
P0136	Pseudomystides limbata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
P0141	Phyllodoce groenlandica		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
P0145	Phyllodoce mucosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
P0155	Eulalia mustela		-	-	-	-	-	-	1	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	1	-	-	-	-
P0167	Eumida sanguinea	aggregate	-	-	-	-	-	1	-	-	-	5	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0256	Glycera alba		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
P0260	Glycera lapidum	aggregate	-	-	-	-	-	-	2	1	-	11	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	6	3	-	-	2	1	1	1	2
P0262	Glycera oxycephala		-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	1	-	-	-	1	-	-	2	1
P0268	Glycinde nordmanni		-	-	-	-	-	1	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
P0271	Goniada maculata		2	-	Frag.	1	Frag.	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-
P0276	Goniadella gracilis		-	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-
P0305	Psamathe fusca		-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
P0340	Glyphohesione klatti		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0358	Syllis parapari		-	-	-	1	-	-	-	2	-	4	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	3	-	-	-	-
P0358	Syllis garciai		-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-
P0358	Syllis pontxioi		-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	-	-	-	-
P0358	Syllis licheri		-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0380	Eusyllis blomstrandi		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
P0421	Parexogone hebes		-	-	-	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	1
P0423	Exogone verugera		-	-	2	4	-	1	-	-	-	-	-	1	-	-	-	1	-	-	-	-	1	-	1	-	1	-	1	-	-	-	1	-	-	-	1	-
P0458	Rullierinereis ancornunezi		-	-	-	-	-	-	-	1	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0475	Eunereis longissima		-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0478	Nereis zonata		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0487	Websterinereis glauca		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
P0493	Aglaophamus agilis		-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0494	Nephtys	juvenile	-	3	-	1	1	-	-	-	-	-	-	-	1	-	-	1	1	1	Frag.	-	1	-	1	2	-	1	2	-	-	1	-	-	1	-	1	1
P0498	Nephtys cirrosa		1	-	-	1	-	Frag.	-	-	-	-	-	1	-	1	1	-	-	-	-	-	1	-	-	-	2	3	1	-	1	-	-	-	-	1	-	-
P0503	Nephtys longosetosa		-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0539	Aponuphis bilineata		-	-	-	-	-	-	-	1	-	17	8	-	-	-	5	1	1	-	-	2	1	3	-	1	-	-	-	2	Frag.	-	-	7	-	-	-	-
P0542	Hyalinoecia tubicola		-	-	-	-	1	-	-	-	1	-	-	3	1	-	1	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-	-
P0543	Nothria		-	-	1	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0574	Lumbrineris cingulata	aggregate	-	-	-	1	-	-	-	-	-	2	1	-	-	-	-	Frag.	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	5	-	1	-	-
P0638	Protodorvillea kefersteini		-	-	-	1	-	-	-	-	Frag.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
P0642	Schistomeringos neglecta		-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0655	Orbiniidae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Frag.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0655	Orbiniidae	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
P0665	Orbinia sertulata		-	-	-	-	-	-	1	1	-	-	-	1	1	-	-	-	1	-	-	-	1	1	1	-	-	-	-	-	-	1	-	-	-	-	-	-
P0672	Scoloplos armiger		-	Frag.	1	-	-	-	-	-	1	-	-	4	1	3	-	-	3	-	2	2	4	-	-	-	1	1	1	-	-	-	1	1	1	-	-	-
P0685	Aricidea cerrutii		-	1	-	1	1	1	-	-	1	3	2	-	-	-	-	-	2	2	1	-	-	-	-	-	-	-	-	-	1	-	-	2	1	2	1	-
P0699	Paradoneis lyra		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-	-	-
P0718	Poecilochaetus serpens		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-
P0723	Aonides paucibranchiata		-	-	2	-	-	-	2	4	2	3	1	-	-	-	-	1	1	1	-	-	-	-	1	-	1	-	-	5	-	3	2	5	-	-	1	-
P0733	Laonice bahusiensis		-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0751	Dipolydora caulleryi	aggregate	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
P0766	Aurospio banyulensis		-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	1	1	-	-
P0774	Pseudopolydora pulchra		-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0777	Scolelepis korsuni		-	-	-	-	-	-	1	-	1	-	-	-	1	-	1	-	-	-	-	-	-	-	1	-	1	-	-	1	-	Frag.	-	1	1	-	-	1
P0787	Spio goniocephala		-	-	-	1	-	1	-	1	-	1	-	-	-	-	2	-	-	-	-	-	-	1	-	2	-	-	1	-	-	-	-	-	-	-	-	-
P0788	Spio armata		-	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	1	-	-	-	-	-	-
P0790	Spio symphyta		-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0791	Spio martinensis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
P0794	Spiophanes bombyx		-	2	1	Frag.	1	2	-	-	-	-	2	-	-	-	-	2	2	4	1	1	2	-	1	1	-	-	-	1	-	2	1	-	-	3	1	-

Code	Station		G_01_a	G_01_b	G_01_c	G_02_a	G_02_b	G_02_c	G_03_a	G_03_b	G_03_c	G_04_a	G_04_b	G_04_c	G_05_a	G_05_b	G_05_c	G_06_a	G_06_b	G_06_c	G_07_a	G_07_b	G_07_c	G_08_a	G_08_b	G_08_c	G_09_a	G_09_b	G_09_c	G_10_a	G_10_b	G_10_c	G_11_a	G_11_b	G_11_c	G_12_a	G_12_b	G_12_c
	Taxa	Notes																																				
P0796	Spiophanes kroyeri		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0807	Magelona johnstoni		-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0823	Aphelochaeta species A		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-
P0829	Caulleriella alata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
P0831	Chaetozone zetlandica		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-
P0834	Chaetozone christiei		-	2	-	-	-	-	-	-	-	-	-	-	-	1	-	1	2	3	1	-	-	-	1	-	1	-	-	-	-	-	1	-	Frag.	3	-	-
P0906	Capitella		-	-	-	-	-	-	-	-	1	-	-	13	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0919	Mediomastus fragilis		-	1	-	-	-	-	-	-	-	4	-	Frag.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
P0923	Notomastus		-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-
P0927	Pseudonotomastus southerni		-	-	-	-	-	-	1	2	2	3	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	3	-	-	9	-	-	-	-
P0944	Praxillura longissima		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
P0955	Leiochone		-	1	2	Frag.	2	Frag.	-	Frag.	-	-	-	-	-	-	1	-	1	2	-	1	1	-	-	-	Frag.	-	-	-	1	-	7	3	1	-	2	Frag.
P0963	Euclymene lombricoides		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	Frag.	-	-	-	-	-
P0999	Ophelia borealis		-	1	2	2	2	1	2	2	6	-	7	3	3	2	-	4	3	6	-	2	-	3	1	3	-	2	3	3	2	2	2	1	3	-	-	1
P1007	Travisia forbesii		1	1	2	-	-	-	-	-	-	-	1	1	-	1	5	-	1	-	3	2	2	3	2	4	1	1	1	-	-	-	1	-	-	1	-	-
P1025	Scalibregma inflatum		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
P1026	Scalibregma species A		-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P1062	Polygordius		-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	1	-	-	-	-	-	-
P1093	Galathowenia oculata		-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P1098	Owenia		-	-	1	-	2	1	-	-	2	Frag.	2	1	-	1	2	1	1	2	1	Frag.	-	1	-	-	1	-	-	-	-	-	1	-	-	-	-	-
P1124	Melinna palmata		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P1139	Ampharete lindstroemi		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
P1174	Terebellides		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
P1185	Amphitritides gracilis		-	-	-	-	-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
P1195	Lanice conchilega		-	-	1	-	-	1	-	-	-	6	2	5	1	-	-	-	-	1	-	-	-	1	-	1	1	-	-	1	1	1	-	3	-	-	-	-
P1210	Nicolea venustula		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
P1212	Amphitrite birulai		-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	1	-	-	-	-
P1215	Phisidia aurea		-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	-	-	-	-
P1217	Pista mediterranea		-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-
P1218	Pista cristata (sensu Jirkov)		-	-	-	1	-	-	1	-	-	16	2	1	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	3	-	4	-	6	2	-	1	-
P1235	Polycirrus		-	-	-	-	-	1	1	-	1	10	1	1	-	-	-	1	1	1	1	5	-	-	1	-	-	-	-	1	5	-	Frag.	2	3	-	-	1
P1264	Dialychone		-	-	-	-	-	-	-	-	-	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P1324	Serpulidae		-	-	-	-	-	-	-	-	-	4	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
P1334	Hydroides norvegica		-	-	-	-	-	-	-	Frag.	-	7	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
P1524	Grania		-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-
Q0044	Anoplodactylus petiolatus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
R0015	Sessilia	juvenile	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-
R0077	Balanus crenatus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86	-	-	1	-
S0011	Sarsinebalia urgorrii		-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0044	Gastrosaccus spinifer		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
S0074	Mesopodopsis slabberi		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Frag.	-	-	-
S0102	Apherusa bispinosa		-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
S0131	Perioculodes longimanus		-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0132	Pontocrates species A		-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	1	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-
S0135	Pontocrates arenarius		-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
S0138	Synchelidium maculatum		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
S0249	Urothoe marina		-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	1	2	-	-	-	-	-	-
S0296	Hippomedon denticulatus		-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
S0347	Tryphosites longipes		-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0360	Argissa hamatipes		-	-	-	-	-	-	-	-	-	1	-	-	-	2	-	-	-	-	1	-	-	1	-	-	-	-	-	1	1	-	-	-	-	-	1	-
S0413	Nototropis vedlomensis		-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-
S0427	Ampelisca brevicornis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
S0429	Ampelisca diadema		-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0438	Ampelisca spinipes		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0439	Ampelisca pectenata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0440	Ampelisca tenuicornis		-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0442	Ampelisca typica		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-
S0452	Bathyporeia elegans		1	-	-	3	-	1	-	-	-	-	-	1	-	1	-	-	-	3	1	-	3	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-
S0453	Bathyporeia gracilis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0454	Bathyporeia guilliamsoniana		-	1	-	1	-	1	1	-	-	-	-	-	3	3	2	-	-	-	1	-	-	1	1	2	1	2	1	-	-	-	-	-	-	1	-	-
S0459	Bathyporeia tenuipes		-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0489	Megaluropus agilis		1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	1	-	-	-	-	-	-	-
S0519	Othomaera othonis		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0539	Megamphopus cornutus		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0577	Aoridae	female	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
S0588	Leptocheirus hirsutimanus		-	-	-	-	-	-	1	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0611	Crassicorophium crassicorne		-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	1	1	-	-	-	-	1	-	-	-	-	-	-
S0615	Monocorophium sextonae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0618	Centraloecetes kroyeranus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-
S0640	Caprella mutica		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
S0651	Pariambus typicus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-
S0856	Eurydice truncata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
S0952	Astacilla		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1142	Tanaopsis graciloides		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
S1194	Bodotria arenosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
S1210	Eudorellopsis deformis		1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1236	Pseudocuma longicorne		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1445	Paguridae	juvenile	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
S1472	Galathea intermedia	juvenile	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-
S1504	Ebalia	juvenile	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1518	Hyas araneus	juvenile	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W0053	Leptochiton asellus		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
W0088	Atlanta	?	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W0161	Steromphala tumida		-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W0431	Aporrhais serresiana	juvenile	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Code	Station		G_01_a	G_01_b	G_01_c	G_02_a	G_02_b	G_02_c	G_03_a	G_03_b	G_03_c	G_04_a	G_04_b	G_04_c	G_05_a	G_05_b	G_05_c	G_06_a	G_06_b	G_06_c	G_07_a	G_07_b	G_07_c	G_08_a	G_08_b	G_08_c	G_09_a	G_09_b	G_09_c	G_10_a	G_10_b	G_10_c	G_11_a	G_11_b	G_11_c	G_12_a	G_12_b	G_12_c
	Taxa	Notes																																				
W0482	Naticidae	juvenile	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
W0490	Euspira montagui		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
W0491	Euspira nitida		-	1	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	1	-	-	-	-	-
W0824	Propebela turricula		-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W0963	Ondina warreni		-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W0992	Eulimella acicula		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
W1036	Philine		-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
W1059	Diaphana minuta		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1307	Okenia		-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1519	Antalis entalis		1	-	1	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	-
W1698	Modiolus	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
W1702	Modiolus modiolus	juvenile	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1708	Modiolula phaseolina		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1715	Crenella decussata		3	2	3	3	12	5	-	-	-	2	2	3	2	1	-	2	3	2	1	3	4	1	3	1	1	1	-	-	-	-	4	4	-	1	3	3
W1746	Limatula subauriculata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
W1805	Anomiidae	juvenile	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1892	Montacuta substriata		-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1902	Tellimya ferruginosa		-	-	-	-	-	1	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1921	Astartidae	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
W1929	Goodallia triangularis		-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2	-	-	-	-	2	3
W1973	Spisula	juvenile	4	3	6	6	7	9	4	3	8	1	4	1	5	-	2	2	2	1	-	1	4	-	8	2	5	5	2	-	5	6	2	3	2	1	2	1
W1975	Spisula elliptica		-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2	-	-	-
W1975	Spisula elliptica	juvenile	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-
W1996	Ensis	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	-	-	-	-
W1998	Ensis magnus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
W1999	Ensis ensis		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2006	Phaxas pellucidus		-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-
W2015	Arcopagia crassa		-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2019	Fabulina fabula		1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-
W2023	Asbjornsenia pygmaea		1	-	-	1	8	1	4	1	2	2	8	-	2	3	11	1	1	-	-	1	6	9	3	8	6	3	3	14	12	12	4	2	-	2	4	1
W2051	Gari fervensis		-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	1	1	-	-	-	-	2	-	-	2	-	1	-	-	-	-	-	-	-	-	-
W2051	Gari fervensis	juvenile	-	1	-	1	2	-	-	1	-	-	-	3	1	-	1	-	-	4	2	-	3	-	-	2	-	2	1	-	-	-	-	-	-	-	-	-
W2052	Gari tellinella		-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
W2052	Gari tellinella	juvenile	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2062	Abra prismatica		4	4	5	3	3	4	-	-	-	-	3	2	3	2	3	5	8	4	8	3	7	3	2	5	10	2	2	-	3	1	4	6	10	1	2	1
W2072	Arctica islandica	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
W2091	Venus casina	juvenile	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2098	Chamelea striatula		-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2098	Chamelea striatula	juvenile	3	3	4	-	4	-	-	-	2	-	-	1	1	5	3	3	2	6	2	2	-	1	1	-	1	4	-	-	-	2	1	-	-	-	-	-
W2100	Clausinella fasciata		-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2100	Clausinella fasciata	juvenile	-	-	-	-	-	-	-	-	-	3	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
W2104	Timoclea ovata		-	-	1	3	-	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2124	Venerupis corrugata	juvenile	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2126	Dosinia	juvenile	4	1	1	-	2	1	-	-	1	-	2	-	4	2	1	-	1	-	3	1	4	3	3	2	1	1	-	1	2	2	-	-	-	-	1	-
W2128	Dosinia lupinus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
W2130	Dosinia exoleta		-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-
W2166	Hiatella arctica		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-
W2227	Thracia	juvenile	1	-	-	1	-	-	-	-	1	2	-	-	-	1	-	1	2	-	-	-	-	1	-	-	-	-	1	-	-	-	-	4	-	2	1	-
W2231	Thracia phaseolina		-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
W2233	Thracia villosiuscula		-	-	-	-	1	-	1	1	1	-	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	2	-	-	-	-	-	1
W2239	Cochlodesma praetenue		1	1	-	2	2	1	-	-	-	1	-	2	3	5	10	1	3	6	1	3	2	6	1	4	4	7	5	1	-	1	4	1	1	1	-	1
W2239	Cochlodesma praetenue	juvenile	5	6	14	2	10	3	-	-	-	1	-	2	2	1	2	6	7	11	4	4	6	1	3	-	11	9	8	-	-	1	3	2	1	2	5	-
W2247	Lyonsia norwegica		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Y0027	Tubulipora		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	P	-	-	-	-
Y0066	Disporella hispida		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-
Y0076	Alcyonidium diaphanum		-	-	-	-	-	-	-	-	-	P	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0126	Penetrantiidae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-
Y0165	Eucratea loricata		P	-	-	-	P	-	-	-	-	-	-	-	-	-	-	P	P	P	-	-	P	-	-	-	-	-	-	-	-	-	P	P	P	-	-	-
Y0178	Electra pilosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-
Y0194	Securiflustra securifrons		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-
Y0205	Callopora lineata		-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0241	Bugulina avicularia		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-
Y0265	Cradoscrupocellaria		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-
Y0279	Scrupocellaria scruposa		-	-	-	-	-	-	P	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-
Y0344	Chorizopora brongniartii		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-
Y0364	Escharella immersa		-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0465	Parasmittina trispinosa		-	-	-	-	-	-	-	-	-	P	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
Y0467	Schizomavella		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-
ZA0003	Phoronis		-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	Frag.	-	1	Frag.	-	-	-	-	-	-	-	-	-	-	-	-
ZB0026	Astropecten irregularis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
ZB0148	Amphiuridae	juvenile	3	1	2	-	1	-	-	-	-	3	1	-	-	-	-	-	2	3	-	-	2	1	1	1	-	-	1	-	-	-	-	-	2	-	1	-
ZB0154	Amphiura filiformis		-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
ZB0165	Ophiuridae	juvenile	1	1	-	-	1	1	-	1	-	1	-	1	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	1	1	1	-	3	1	-	3	-
ZB0170	Ophiura ophiura		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
ZB0190	Camarodonta	juvenile	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZB0212	Echinocyamus pusillus		24	27	28	13	14	14	20	9	9	27	10	11	3	2	5	13	16	13	11	8	10	11	5	3	13	9	7	7	56	20	4	2	7	8	8	8
ZB0213	Spatangoida		-	-	-	Frag.	-	-	-	-	-	-	-	-	-	-	-	-	Frag.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZB0213	Spatangoida	juvenile	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZB0219	Spatangus purpureus		-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZB0225	Echinocardium pennatifidum		-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZC0012	Enteropneusta		-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
ZD0002	Ascidiacea	juvenile	-	-	-	1	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	-	1	-	-	-	1	2	-	-
ZG0001	Actinopterygii	eggs	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZG0451	Callionymus	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
ZS0195	Cladophora		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-	-	-	-	-	-	-	-	-	-	P	-	-	-	-

Appendix 5 Raw Biomass Data

Code	Station		G_01_a	G_01_b	G_01_c	G_02_a	G_02_b	G_02_c	G_03_a	G_03_b	G_03_c	G_04_a	G_04_b	G_04_c	G_05_a	G_05_b	G_05_c	G_06_a	G_06_b	G_06_c	G_07_a	G_07_b	G_07_c	G_08_a	G_08_b	G_08_c	G_09_a	G_09_b	G_09_c	G_10_a	G_10_b	G_10_c	G_11_a	G_11_b	G_11_c	G_12_a	G_12_b	G_12_c
	Taxa	Notes																																				
-	Animalia	eggs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A5050	Folliculinidae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C0475	Cliona		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D0157	Euphysa aurata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D0246	Bougainvilliidae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D0287	Merona cornucopiae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D0424	Hydrallmania falcata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D0433	Sertularia		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D0462	Nemertesia		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D0632	Cerianthus lloydii	juvenile	-	-	-	-	-	-	-	-	-	-	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0008	-	-
D0759	Edwardsiidae		-	0.0026	-	-	-	-	-	-	-	-	0.0214	0.0219	-	0.0255	-	0.0143	0.0064	-	-	-	-	-	0.0053	-	-	-	-	-	-	-	-	-	-	-	-	-
F0001	Platyhelminthes		-	-	-	-	-	-	-	-	-	0.0007	-	-	-	-	-	0.0256	-	-	-	-	-	-	-	-	-	-	-	0.0029	-	-	-	0.0132	-	-	-	-
G0001	Nemertea		0.0025	0.0001	0.0002	-	0.0018	0.0018	-	0.0028	-	0.0634	-	0.0009	-	-	-	0.0023	0.0033	0.061	0.0038	-	-	0.0185	-	-	-	0.0092	0.0073	0.0054	-	-	0.0001	0.0036	-	0.0086	-	-
G0039	Cerebratulus		-	-	-	-	-	-	-	-	-	-	-	0.0152	-	-	-	-	0.0022	-	-	-	-	-	0.0001	-	-	-	-	-	-	-	0.0134	-	-	-	-	-
G0107	Oerstedia		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0015	-	-	-	-	-	-	-	-
G0133	Tetrastemma robertianae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	-
HD0001	Nematoda		-	-	-	0.0001	0.0001	0.0001	-	0.0001	-	0.0001	-	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	0.0001	0.0001	0.0001	-	-	-
K0030	Loxosomella murmanica		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N0025	Nephasoma minutum		-	-	-	-	0.0006	-	-	-	-	0.0131	-	0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N0034	Phascolion strombus		-	-	-	0.025	0.0034	-	0.0042	0.0298	0.0013	0.0708	0.0377	0.0345	-	0.0058	-	0.0311	-	0.0147	0.0003	-	-	-	-	-	-	-	-	0.0338	-	0.0001	0.0224	0.0718	0.0077	-	0.0001	-
N0047	Aspidosiphon muelleri		-	-	-	-	-	-	-	-	-	0.0202	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0015	Pisione remota		-	-	-	-	-	-	0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	0.0001	-	0.0001	-	-	-	-
P0049	Gattyana cirrhosa		-	-	-	-	-	-	-	-	-	0.0012	-	0.0016	-	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0006	-	0.0001	-	0.0027	0.0015	-	-	-
P0050	Malmgrenia darbouxi		-	-	-	-	-	-	-	-	0.001	0.0006	0.0011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0055	Malmgrenia castanea		-	-	-	-	-	-	-	-	-	0.0212	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0062	Harmothoe glabra		0.0013	-	-	-	-	-	-	-	-	0.0002	-	-	-	-	0.0019	-	0.0008	-	-	-	0.001	-	-	-	0.0001	0.0009	-	-	-	-	-	-	-	-	-	-
P0066	Malmgrenia ljungmani		-	-	-	-	-	-	0.0005	-	-	-	0.0011	-	-	-	-	-	-	0.001	0.0036	-	-	-	-	-	-	-	-	-	-	-	-	0.0023	-	-	-	-
P0070	Malmgrenia mcintoshi		-	-	-	-	-	-	-	-	-	0.067	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0092	Pholoe baltica (sensu Petersen)		-	-	-	-	0.001	-	-	-	-	0.0007	-	0.0008	-	-	-	-	-	0.0001	-	-	-	-	-	-	0.0006	-	-	-	-	-	-	-	0.0001	-	-	-
P0094	Pholoe inornata (sensu Petersen)		-	-	-	-	-	-	-	-	-	0.0018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0028	-	-	-	-
P0109	Sthenelais limicola		-	-	-	-	-	-	-	-	-	-	-	0.0426	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0154	0.029	-	-
P0118	Eteone longa	aggregate	-	-	-	-	-	-	-	0.0006	-	0.0052	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0017	-	-	-	-	-	-	-
P0122	Hesionura elongata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-
P0136	Pseudomystides limbata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0004	-	-	-	-	-	-	-
P0141	Phyllodoce groenlandica		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0023	-	-	-	-	0.0009	-	-	-	-	-	0.004	-	-	0.0015	-	-	-	-	-
P0145	Phyllodoce mucosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	-
P0155	Eulalia mustela		-	-	-	-	-	-	0.0002	0.0003	-	0.0008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	0.0005	-	-	0.0001	-	-	-	-
P0167	Eumida sanguinea	aggregate	-	-	-	-	-	0.0006	-	-	-	0.0103	-	0.0001	-	-	-	-	-	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0256	Glycera alba		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1736	-	-	-	-	-
P0260	Glycera lapidum	aggregate	-	-	-	-	-	-	0.0085	0.0003	-	0.0414	0.0063	0.0025	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	0.0122	0.0025	-	-	0.0022	0.0002	0.0001	0.0006	0.0035
P0262	Glycera oxycephala		-	0.0001	-	-	-	-	-	0.0146	-	-	-	-	-	-	-	-	-	-	-	-	0.0112	-	-	-	-	0.0061	-	0.0019	-	-	-	0.0032	-	-	0.0007	0.0001
P0268	Glycinde nordmanni		-	-	-	-	-	0.0007	-	0.0017	-	0.0096	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0555	-
P0271	Goniada maculata		0.0082	-	0.0011	0.016	0.0068	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0063	-	0.0081	-	-	-	-	0.0025	-	-	-	-	0.0162	0.0083	-	-	-	-
P0276	Goniadella gracilis		-	-	-	-	-	-	-	0.0021	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	0.0001	-	-	-	-
P0305	Psamathe fusca		-	-	-	-	-	-	-	0.0025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0012	-	-	-	-	-	-	-
P0340	Glyphohesione klatti		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0358	Syllis parapari		-	-	-	0.002	-	-	-	0.0027	-	0.0126	0.0007	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0018	0.0004	-	-	0.0053	-	-	-	-
P0358	Syllis garciai		-	-	-	-	-	-	-	0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0023	-	-	-	-
P0358	Syllis pontxioi		-	-	-	-	-	-	-	-	-	0.0021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-	-	0.0001	-	-	-	-
P0358	Syllis licheri		-	-	-	-	-	-	0.0011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0380	Eusyllis blomstrandi		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	-
P0421	Parexogone hebes		-	-	-	0.0001	0.0001	0.0003	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	0.0002
P0423	Exogone verugera		-	-	0.0005	0.0009	-	0.0003	-	-	-	-	-	0.0001	-	-	-	0.0001	-	-	-	-	0.0003	-	0.0001	-	0.0001	-	0.0003	-	-	-	0.0001	-	-	-	0.0002	-
P0458	Rullierinereis ancornunezi		-	-	-	-	-	-	-	0.0001	0.0001	0.0014	0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0475	Eunereis longissima		-	-	-	-	-	-	-	-	-	0.0135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0478	Nereis zonata		-	-	-	-	-	-	-	-	-	0.0186	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0487	Websterinereis glauca		-	-	-	-	-	-	-	-	-	0.0008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	-
P0493	Aglaophamus agilis		-	-	-	-	-	-	0.0107	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0494	Nephtys	juvenile	-	0.0115	-	0.0073	0.0049	-	-	-	-	-	-	-	0.0014	-	-	0.0069	0.0014	0.0001	0.0103	-	0.0016	-	0.0011	0.0039	-	0.0001	0.0224	-	-	0.0023	-	-	0.0001	-	0.003	0.0037
P0498	Nephtys cirrosa		0.0164	-	-	0.0176	-	0.0008	-	-	-	-	-	0.0058	-	0.0065	0.1616	-	-	-	-	-	0.0274	-	-	-	0.0586	0.0339	0.0734	-	0.0508	-	-	-	-	0.0304	-	-
P0503	Nephtys longosetosa		-	-	-	-	-	-	-	0.2051	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0539	Aponuphis bilineata		-	-	-	-	-	-	-	0.0495	-	0.9035	0.1312	-	-	-	0.0063	0.0009	0.0073	-	-	0.0035	0.0986	0.008	-	0.0049	-	-	-	0.0462	0.0072	-	-	0.229	-	-	-	-
P0542	Hyalinoecia tubicola		-	-	-	-	0.0001	-	-	-	0.0001	-	-	0.0012	0.001	-	0.0005	-	-	-	-	-	-	-	0.0001	-	0.0007	-	-	-	-	-	-	-	-	-	-	-
P0543	Nothria		-	-	0.0003	-	0.0039	-	-	-	-	0.0095	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0574	Lumbrineris cingulata	aggregate	-	-	-	0.0006	-	-	-	-	-	0.0171	0.0181	-	-	-	-	0.0012	0.0001	-	-	-	0.0002	-	-	-	-	-	-	-	-	-	-	0.0076	-	0.0002	-	-
P0638	Protodorvillea kefersteini		-	-	-	0.0002	-	-	-	-	0.0001	0.0003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	-
P0642	Schistomeringos neglecta		-	-	-	-	-	-	-	-	-	0.0073	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0655	Orbiniidae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0655	Orbiniidae	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	-	-	-	-	-	-	-
P0665	Orbinia sertulata		-	-	-	-	-	-	0.0145	0.0027	-	-	-	0.0033	0.0078	-	-	-	0.0103	-	-	-	0.0085	0.0013	0.0028	-	-	-	-	-	-	0.0021	-	-	-	-	-	-
P0672	Scoloplos armiger		-	0.0001	0.0065	-	-	-	-	-	0.006	-	-	0.0474	0.0436	0.0219	-	-	0.0319	-	0.054	0.0377	0.0641	-	-	-	0.0046	0.0002	0.0044	-	-	-	0.0018	0.005	0.0016	-	-	-
P0685	Aricidea cerrutii		-	0.0009	-	0.0018	0.0001	0.0004	-	-	0.0015	0.0023	0.0045	-	-	-	-	-	0.0015	0.0023	0.0005	-	-	-	-	-	-	-	-	-	0.0013	-	-	0.0014	0.0001	0.0029	0.0006	-
P0699	Paradoneis lyra		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	0.0013	-	-	-
P0718	Poecilochaetus serpens		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0024	-	-	-	-	-	-	-	-	-	0.0001	-	-	-
P0723	Aonides paucibranchiata		-	-	0.0015	-	-	-	0.0035	0.0062	0.0021	0.0053	0.0042	-	-	-	-	0.0003	0.0011	0.0001	-	-	-	-	0.0007	-	0.0011	-	-	0.0111	-	0.0012	0.0026	0.0114	-	-	0.0002	-
P0733	Laonice bahusiensis		-	-	-	-	-	-	-	-	-	0.046	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0751	Dipolydora caulleryi	aggregate	-	-	-	-	-	-	-	-	-	0.0012	-	-	-	-	-	-	-	-	-	-	-	-	0.0029	-	-	-	-	-	-	-	-	-	-	-	-	-
P0766	Aurospio banyulensis		-	-	-	-	-	-	-	-	-	0.0008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	0.0015	0.0011	0.0001	-	-
P0774	Pseudopolydora pulchra		-	-	-	-	-	-	-	-	-	-	0.0012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0777	Scolelepis korsuni		-	-	-	-	-	-	0.0101	-	0.0015	-	-	-	0.0054	-	0.0104	-	-	-	-	-	-	-	0.0036	-	0.0002	-	-	0.0048	-	0.0053	-	0.0039	0.0044	-	-	0.0034
P0787	Spio goniocephala		-	-	-	0.0011	-	0.0004	-	0.0002	-	0.0072	-	-	-	-	0.0128	-	-	-	-	-	-	0.0114	-	0.0047	-	-	0.0114	-	-	-	-	-	-	-	-	-
P0788	Spio armata		-	-	-	-	-	-	-	-	-	-	0.0008	0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0074	0.0029	-	-	-	-	-	-
P0790	Spio symphyta		-	-	-	-	-	-	0.0246	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0791	Spio martinensis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0031	-	-	-	-
P0794	Spiophanes bombyx		-	0.0044	0.0029	0.003	0.0059	0.0039	-	-	-	-	0.0021	-	-	-	-	0.0012	0.0017	0.0047	0.0045	0.0016	0.0031	-	0.0064	0.0008	-	-	-	0.0062	-	0.0168	0.0001	-	-	0.0075	0.0044	-

Code	Station		G_01_a	G_01_b	G_01_c	G_02_a	G_02_b	G_02_c	G_03_a	G_03_b	G_03_c	G_04_a	G_04_b	G_04_c	G_05_a	G_05_b	G_05_c	G_06_a	G_06_b	G_06_c	G_07_a	G_07_b	G_07_c	G_08_a	G_08_b	G_08_c	G_09_a	G_09_b	G_09_c	G_10_a	G_10_b	G_10_c	G_11_a	G_11_b	G_11_c	G_12_a	G_12_b	G_12_c
	Taxa	Notes																																				
P0796	Spiophanes kroyeri		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0807	Magelona johnstoni		-	-	0.0006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0823	Aphelochaeta species A		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0215	-	-	-	-	0.0127	-	-	-	-	-	-	-	0.0012	-	-	-
P0829	Caulleriella alata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0003
P0831	Chaetozone zetlandica		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.028	-	-	-	-
P0834	Chaetozone christiei		-	0.0027	-	-	-	-	-	-	-	-	-	-	-	0.0042	-	0.0028	0.0063	0.0048	0.0015	-	-	-	0.0027	-	0.005	-	-	-	-	-	0.0018	-	0.0006	0.0088	-	-
P0906	Capitella		-	-	-	-	-	-	-	-	0.005	-	-	0.0281	-	-	-	-	0.0012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P0919	Mediomastus fragilis		-	0.0001	-	-	-	-	-	-	-	0.0073	-	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0012	-	-	-	-
P0923	Notomastus		-	-	-	-	-	-	-	-	-	0.0302	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0376	-	-	-	-
P0927	Pseudonotomastus southerni		-	-	-	-	-	-	0.0025	0.0372	0.0753	0.2113	0.0419	-	-	-	-	-	-	-	-	-	-	-	0.0026	-	-	-	-	-	0.0655	-	-	0.236	-	-	-	-
P0944	Praxillura longissima		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0047	-	-	-	-	-
P0955	Leiochone		-	0.0499	0.0483	0.0134	0.0257	0.0263	-	0.0006	-	-	-	-	-	-	0.0011	-	0.0007	0.0011	-	0.0038	0.0205	-	-	-	0.0001	-	-	-	0.0938	-	0.0928	0.1933	0.0445	-	0.0023	0.0024
P0963	Euclymene lombricoides		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0027	0.0009	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	-	-
P0999	Ophelia borealis		-	0.0222	0.0083	0.0055	0.0088	0.0052	0.0486	0.0077	0.035	-	0.0551	0.0117	0.017	0.0083	-	0.0185	0.0096	0.0393	-	0.0124	-	0.0147	0.0057	0.0295	-	0.0262	0.0133	0.0174	0.0093	0.0211	0.0086	0.0026	0.0201	-	-	0.0249
P1007	Travisia forbesii		0.0198	0.0043	0.0361	-	-	-	-	-	-	-	0.0341	0.0026	-	0.0029	0.0553	-	0.0057	-	0.0327	0.0077	0.0461	0.0122	0.0055	0.0219	0.0504	0.0048	0.002	-	-	-	0.0141	-	-	0.0018	-	-
P1025	Scalibregma inflatum		-	-	-	-	-	-	-	-	-	0.0311	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	-
P1026	Scalibregma species A		-	-	-	-	-	-	-	-	-	0.0142	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P1062	Polygordius		-	-	-	-	-	-	-	0.0009	-	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	0.0014	0.0001	-	-	-	-	-	-
P1093	Galathowenia oculata		-	-	-	0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P1098	Owenia		-	-	0.0011	-	0.0049	0.0003	-	-	0.0024	0.0001	0.0018	0.0001	-	0.0016	0.0031	0.0012	0.0002	0.0009	0.0012	0.001	-	0.0002	-	-	0.0001	-	-	-	-	-	0.0001	-	-	-	-	-
P1124	Melinna palmata		0.0145	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P1139	Ampharete lindstroemi		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0071	-	-	-	-
P1174	Terebellides		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0181	-	-	-	-
P1185	Amphitritides gracilis		-	-	-	-	-	-	-	0.0288	-	0.0065	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0651	-	-	-	-
P1195	Lanice conchilega		-	-	0.0001	-	-	0.0001	-	-	-	0.18	0.4902	0.0126	0.007	-	-	-	-	0.0017	-	-	-	0.006	-	0.0014	0.0001	-	-	0.0079	0.1926	0.0042	-	0.6333	-	-	-	-
P1210	Nicolea venustula		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0199	-	-	-	-
P1212	Amphitrite birulai		-	-	-	-	-	-	-	-	-	0.0163	0.0218	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0052	0.0014	-	-	0.0287	-	-	-	-
P1215	Phisidia aurea		-	-	-	-	-	-	-	-	-	0.0011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	0.0112	-	-	-	-
P1217	Pista mediterranea		-	-	-	-	-	-	-	-	-	0.0301	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0061	-	-	-	0.0562	-	-	-	-
P1218	Pista cristata (sensu Jirkov)		-	-	-	0.0008	-	-	0.0385	-	-	0.144	0.0041	0.0014	-	-	-	-	-	-	-	-	-	-	0.0028	-	-	-	-	0.0047	-	0.0103	-	0.0165	0.003	-	0.0017	-
P1235	Polycirrus		-	-	-	-	-	0.0013	0.0006	-	0.0029	0.016	0.0062	0.006	-	-	-	0.002	0.0006	0.0116	0.0008	0.0117	-	-	0.0031	-	-	-	-	0.0021	0.0176	-	0.0037	0.0177	0.0053	-	-	0.0009
P1264	Dialychone		-	-	-	-	-	-	-	-	-	0.014	0.0035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P1324	Serpulidae		-	-	-	-	-	-	-	-	-	0.0018	-	0.0067	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0033	-	-	-	-	-	-	-	-
P1334	Hydroides norvegica		-	-	-	-	-	-	-	0.0001	-	0.0069	0.0008	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0045	-	-	-	-	-	-	-	-
P1524	Grania		-	-	-	-	-	-	-	-	0.0001	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	0.0001	-	-	-	-	-	-
Q0044	Anoplodactylus petiolatus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-
R0015	Sessilia	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
R0077	Balanus crenatus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0011	Sarsinebalia urgorrii		-	-	-	-	0.0021	-	-	-	-	0.0008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0044	Gastrosaccus spinifer		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	-	-	-	-	-	-
S0074	Mesopodopsis slabberi		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0024	-	-	-
S0102	Apherusa bispinosa		-	-	-	-	-	-	-	-	-	0.0037	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0012	-	-	-	-
S0131	Perioculodes longimanus		-	-	0.0014	-	-	-	-	-	-	-	-	-	-	-	0.0023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0132	Pontocrates species A		-	-	-	-	-	-	-	-	-	-	-	-	-	0.0012	-	-	0.001	-	-	0.0012	-	0.0014	-	-	-	-	-	-	0.0009	-	-	-	-	-	-	-
S0135	Pontocrates arenarius		-	-	-	-	-	-	-	0.0017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	-	-	-	-
S0138	Synchelidium maculatum		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-
S0249	Urothoe marina		-	-	-	-	-	-	0.0105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0189	0.0128	0.0104	-	-	-	-	-	-
S0296	Hippomedon denticulatus		-	0.0045	0.0141	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.039	-	-	-	-	-	-	0.0051	-	-	-	-	-	-	-	-	-	-	-
S0347	Tryphosites longipes		-	-	-	0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0360	Argissa hamatipes		-	-	-	-	-	-	-	-	-	0.0007	-	-	-	0.001	-	-	-	-	0.0007	-	-	0.0004	-	-	-	-	-	0.0004	0.0015	-	-	-	-	-	0.0007	-
S0413	Nototropis vedlomensis		-	-	-	-	-	-	-	-	-	0.0042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	0.0027	-	-	-	-
S0427	Ampelisca brevicornis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0068	-	-
S0429	Ampelisca diadema		-	-	-	-	-	-	-	-	-	-	-	0.0052	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0438	Ampelisca spinipes		-	-	-	-	-	-	-	-	-	0.0008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0439	Ampelisca pectenata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0440	Ampelisca tenuicornis		-	-	-	-	-	-	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0442	Ampelisca typica		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0079	0.006	-	-	-	-	-	-	-
S0452	Bathyporeia elegans		0.0014	-	-	0.0057	-	0.0021	-	-	-	-	-	0.0001	-	0.0008	-	-	-	0.0021	0.0021	-	0.0021	0.0011	-	-	-	-	0.0015	-	-	-	-	-	-	-	-	-
S0453	Bathyporeia gracilis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0454	Bathyporeia guilliamsoniana		-	0.0024	-	0.0048	-	0.0093	0.0019	-	-	-	-	-	0.0172	0.0153	0.0222	-	-	-	0.0069	-	-	0.0014	0.0032	0.0127	0.0034	0.0076	0.0047	-	-	-	-	-	-	0.0048	-	-
S0459	Bathyporeia tenuipes		-	-	-	-	-	-	-	-	-	-	0.0023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0489	Megaluropus agilis		0.0001	-	-	-	-	0.0002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	0.0001	-	-	-	0.0009	-	-	-	-	-	-	-
S0519	Othomaera othonis		-	-	-	-	-	-	-	-	-	0.0093	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0539	Megamphopus cornutus		-	-	-	-	-	-	-	-	-	0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0577	Aoridae	female	-	-	-	-	-	-	-	-	-	0.0013	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	-	-
S0588	Leptocheirus hirsutimanus		-	-	-	-	-	-	0.0014	-	-	0.0088	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0611	Crassicorophium crassicorne		-	-	0.0004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0025	-	-	0.0007	-	0.0002	0.0021	-	-	-	-	0.0021	-	-	-	-	-	-
S0615	Monocorophium sextonae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S0618	Centraloecetes kroyeranus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00001	0.0001	-	-	-
S0640	Caprella mutica		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0064	-	-
S0651	Pariambus typicus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	0.0006	-	-	-	-
S0856	Eurydice truncata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0033	-	-	-	-	-	-
S0952	Astacilla		-	-	-	-	-	-	-	-	-	0.0004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1142	Tanaopsis graciloides		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-
S1194	Bodotria arenosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0006	-	-	-	-	-	-	-	-
S1210	Eudorellopsis deformis		0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1236	Pseudocuma longicorne		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1445	Paguridae	juvenile	-	-	-	-	-	-	-	0.0018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1499	-	-	-	-	-	-	-
S1472	Galathea intermedia	juvenile	-	-	-	-	-	-	-	0.0005	-	0.0019	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0015	-	-	-	-	0.0017	-	-	-	-	-	-	-
S1504	Ebalia	juvenile	-	-	-	-	-	-	-	-	-	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S1518	Hyas araneus	juvenile	-	-	-	-	-	-	-	-	-	0.0086	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W0053	Leptochiton asellus		-	-	-	-	-	-	-	-	-	0.0004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0023	-	-	-	-
W0088	Atlanta	?	-	-	-	-	-	-	-	-	-	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W0161	Steromphala tumida		-	-	-	-	-	-	-	-	-	0.0539	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W0431	Aporrhais serresiana	juvenile	-	-	-	-	-	-	-	-	-	0.0418	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W0482	Naticidae	juvenile	-	-	-	0.0029	-	-	-	-	-	0.0146	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0016	-
W0490	Euspira montagui		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0126	-	-	-
W0491	Euspira nitida		-	0.0146	-	-	-	-	-	-	-	0.0661	-	0.0081	-	-	-	-	-	-	-	-	-	-	-	-	0.0031	-	-	0.0089	-	-	0.0894	-	-	-	-	-

Code	Station		G_01_a	G_01_b	G_01_c	G_02_a	G_02_b	G_02_c	G_03_a	G_03_b	G_03_c	G_04_a	G_04_b	G_04_c	G_05_a	G_05_b	G_05_c	G_06_a	G_06_b	G_06_c	G_07_a	G_07_b	G_07_c	G_08_a	G_08_b	G_08_c	G_09_a	G_09_b	G_09_c	G_10_a	G_10_b	G_10_c	G_11_a	G_11_b	G_11_c	G_12_a	G_12_b	G_12_c
	Taxa	Notes																																				
W0824	Propebela turricula		-	0.0001	-	-	-	0.0008	-	-	-	-	-	-	-	-	-	-	0.0004	0.0007	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W0963	Ondina warreni		-	-	-	-	-	-	-	-	-	-	0.0012	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W0992	Eulimella acicula		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0024	-	-	-	-
W1036	Philine		-	-	-	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0016	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-
W1059	Diaphana minuta		-	-	-	-	-	-	-	-	-	0.0006	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1307	Okenia		-	-	-	-	-	-	-	-	-	-	-	-	-	0.0011	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1519	Antalis entalis		0.0009	-	0.0202	-	-	-	-	-	-	-	-	-	-	-	0.0019	0.0726	-	0.0319	-	-	-	-	-	-	-	-	-	-	-	-	0.0064	0.1407	0.0001	-	-	-
W1698	Modiolus	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0006	-
W1702	Modiolus modiolus	juvenile	-	-	-	-	-	-	-	-	-	-	-	0.6032	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1708	Modiolula phaseolina		-	-	-	-	-	-	-	-	-	0.0008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1715	Crenella decussata		0.0033	0.002	0.0032	0.0044	0.017	0.0064	-	-	-	0.0043	0.0018	0.0042	0.0038	0.0019	-	0.0032	0.0039	0.0038	0.003	0.0035	0.0045	0.0015	0.004	0.0002	0.0018	0.0017	-	-	-	-	0.0067	0.0049	-	0.0026	0.0033	0.0041
W1746	Limatula subauriculata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0025	-	-	-	-
W1805	Anomiidae	juvenile	-	-	-	-	-	-	-	-	-	0.0289	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1892	Montacuta substriata		-	-	-	-	-	-	-	-	-	0.0045	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1902	Tellimya ferruginosa		-	-	-	-	-	0.0014	-	-	-	0.0033	-	0.0018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W1921	Astartidae	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0011	-
W1929	Goodallia triangularis		-	-	-	-	-	0.0012	-	-	-	-	0.0014	-	-	-	-	-	-	-	-	-	0.0041	-	-	-	-	-	-	-	-	0.0101	-	-	-	-	0.0044	0.0064
W1973	Spisula	juvenile	0.0054	0.0102	0.0079	0.019	0.0255	0.0093	0.0184	0.0099	0.0114	0.0027	0.0076	0.0013	0.013	-	0.0045	0.002	0.0022	0.0001	-	0.0009	0.0045	-	0.0149	0.0018	0.0225	0.0231	0.0029	-	0.0075	0.0095	0.0072	0.0027	0.0335	0.012	0.0129	0.0097
W1975	Spisula elliptica		-	-	0.1051	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.266	-	-	-	-	-	-	-	-	0.3603	-	-	-
W1975	Spisula elliptica	juvenile	-	-	-	-	0.0808	-	-	-	-	-	-	-	0.031	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.092	0.0517	-
W1996	Ensis	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0002	-	-	-	-	-	-	-	0.0018	-	-	-	-	0.0012	-	-	-	-	-	-	-	-
W1998	Ensis magnus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.1376	-	-	-	-	-	-	-	-
W1999	Ensis ensis		-	-	-	-	-	-	-	-	-	0.3778	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2006	Phaxas pellucidus		-	-	0.0008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0014	-	-	-	-	-	0.0014	-	-	-
W2015	Arcopagia crassa		-	-	-	-	-	-	6.8057	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2019	Fabulina fabula		0.0023	0.0838	0.0284	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	0.0034	-	-	-	-	-	-	0.0038	0.0001	-	-	-	-	-	-	-	-	-	-
W2023	Asbjornsenia pygmaea		0.0001	-	-	0.0006	0.0291	0.0018	0.0113	0.0011	0.0074	0.0536	0.0573	-	0.0038	0.009	0.0227	0.0016	0.0192	-	-	0.022	0.0291	0.0303	0.0143	0.0466	0.0377	0.0064	0.0202	0.055	0.0552	0.0469	0.006	0.0001	-	0.005	0.0344	0.0193
W2051	Gari fervensis		-	1.2894	-	-	-	-	-	-	-	-	0.1612	-	-	-	-	0.3806	0.378	-	-	-	-	1.745	-	-	0.0069	-	1.5059	-	-	-	-	-	-	-	-	-
W2051	Gari fervensis	juvenile	-	0.0009	-	0.0028	0.0117	-	-	0.0016	-	-	-	0.008	0.0042	-	0.0031	-	-	0.0074	0.0079	-	0.008	-	-	0.0108	-	0.0094	0.0043	-	-	-	-	-	-	-	-	-
W2052	Gari tellinella		-	-	-	-	-	-	0.0411	-	-	0.6217	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0368	-	-	-	-	-	-	-	-
W2052	Gari tellinella	juvenile	-	-	-	-	-	-	0.0041	-	-	-	0.0034	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2062	Abra prismatica		0.0039	0.0046	0.0043	0.006	0.006	0.0048	-	-	-	-	0.0026	0.0025	0.005	0.0415	0.0059	0.0041	0.0179	0.0059	0.0076	0.0025	0.0065	0.0022	0.0036	0.032	0.0107	0.0018	0.0008	-	0.005	0.0001	0.0058	0.0057	0.0188	0.0002	0.039	0.0006
W2072	Arctica islandica	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	0.0267	-	-	-	0.0008	-	-	-	-	-	-	-	0.0126	-	-	-	-	-	-	-	-	-	-	-
W2091	Venus casina	juvenile	-	-	-	0.01	-	0.0004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2098	Chamelea striatula		-	-	-	-	-	-	-	1.729	-	-	-	-	-	-	-	1.2677	-	2.8401	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2098	Chamelea striatula	juvenile	0.0027	0.0018	0.0039	-	0.0034	-	-	-	0.0255	-	-	0.0001	0.0014	0.0425	0.0068	0.0022	0.0019	0.0058	0.0014	0.0082	-	0.0009	0.0009	-	0.0025	0.0191	-	-	-	0.0018	0.0045	-	-	-	-	-
W2100	Clausinella fasciata		-	-	-	-	-	-	-	3.0539	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2100	Clausinella fasciata	juvenile	-	-	-	-	-	-	-	-	-	0.007	-	-	0.0289	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0036
W2104	Timoclea ovata		-	-	0.0011	0.004	-	-	-	-	-	0.0045	-	0.0072	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2124	Venerupis corrugata	juvenile	-	-	-	-	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
W2126	Dosinia	juvenile	0.0178	0.0012	0.0006	-	0.015	0.0131	-	-	0.0006	-	0.0111	-	0.0052	0.0027	0.0005	-	0.0122	-	0.0027	0.0013	0.0423	0.0025	0.005	0.019	0.0051	0.0001	-	0.0174	0.0025	0.0139	-	-	-	-	0.003	-
W2128	Dosinia lupinus		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.4746	-	-	-	-	-	-	0.3948	-	-	-	-	-	-	-	-	-
W2130	Dosinia exoleta		-	-	-	-	-	-	-	-	-	-	-	0.2837	-	-	-	-	-	-	-	-	-	-	-	-	2.6228	-	-	-	-	3.0008	-	-	-	-	-	-
W2166	Hiatella arctica		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0013	0.0028	-	-	-
W2227	Thracia	juvenile	0.0124	-	-	0.0017	-	-	-	-	0.0067	0.0156	-	-	-	0.0236	-	0.0082	0.0099	-	-	-	-	0.0016	-	-	-	-	0.0009	-	-	-	-	0.008	-	0.005	0.0026	-
W2231	Thracia phaseolina		-	-	-	0.0947	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0117	-	-
W2233	Thracia villosiuscula		-	-	-	-	0.1916	-	0.0826	1.293	0.1612	-	0.2951	-	-	-	-	-	-	-	-	-	-	-	0.0434	-	-	-	-	0.0452	-	0.0851	-	-	-	-	-	0.0292
W2239	Cochlodesma praetenue		0.2745	0.0156	-	0.3196	0.0482	0.0642	-	-	-	0.2553	-	0.5796	0.039	0.6759	2.2779	0.0616	0.2263	1.3452	0.8946	0.211	0.0478	0.526	0.0722	0.1095	1.1251	0.6276	0.5597	0.0165	-	0.453	0.9797	0.0401	0.0232	0.0432	-	0.0841
W2239	Cochlodesma praetenue	juvenile	0.0169	0.0176	0.0634	0.006	0.0283	0.0037	-	-	-	0.0027	-	0.0056	0.004	0.0034	0.0065	0.0081	0.0441	0.0288	0.01	0.0187	0.0088	0.0089	0.0148	-	0.0415	0.0277	0.0408	-	-	0.0001	0.0254	0.0014	0.0124	0.0028	0.0072	-
W2247	Lyonsia norwegica		-	-	-	-	-	-	-	-	-	0.0392	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0546	-	-	-
Y0027	Tubulipora		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0066	Disporella hispida		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0076	Alcyonidium diaphanum		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0126	Penetrantiidae		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0165	Eucratea loricata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0178	Electra pilosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0194	Securiflustra securifrons		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0205	Callopora lineata		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0241	Bugulina avicularia		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0265	Cradoscrupocellaria		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0279	Scrupocellaria scruposa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0344	Chorizopora brongniartii		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0364	Escharella immersa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0465	Parasmittina trispinosa		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Y0467	Schizomavella		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZA0003	Phoronis		-	-	0.0003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0041	-	0.04	-	0.0001	0.0001	-	-	-	-	-	-	-	-	-	-	-	-
ZB0026	Astropecten irregularis		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.422	-	-	-	-	-	-	-
ZB0148	Amphiuridae	juvenile	0.0013	0.0001	0.0005	-	0.0001	-	-	-	-	0.0013	0.0002	-	-	-	-	-	0.0009	0.0012	-	-	0.0007	0.0004	0.0001	0.001	-	-	0.0013	-	-	-	-	-	0.0005	-	0.0003	-
ZB0154	Amphiura filiformis		-	0.0057	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0315	-	-	-
ZB0165	Ophiuridae	juvenile	0.0001	0.0001	-	-	0.0013	0.0001	-	0.0001	-	0.0003	-	0.0001	-	-	-	0.0001	-	-	0.0005	-	-	-	-	-	-	-	-	0.0001	0.0002	0.0001	-	0.0016	0.0001	-	0.0006	-
ZB0170	Ophiura ophiura		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0122	-	-	-	-
ZB0190	Camarodonta	juvenile	-	-	-	-	-	-	-	-	-	0.0118	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZB0212	Echinocyamus pusillus		0.0165	0.033	0.0303	0.0116	0.0071	0.0045	0.0251	0.0095	0.018	0.2779	0.0191	0.04	0.0025	0.0096	0.0111	0.0096	0.0115	0.0121	0.0099	0.0048	0.0082	0.0378	0.0058	0.0021	0.0205	0.0044	0.0203	0.025	0.1111	0.0377	0.0246	0.0023	0.0149	0.0051	0.0092	0.021
ZB0213	Spatangoida		-	-	-	0.298	-	-	-	-	-	-	-	-	-	-	-	-	4.2385	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZB0213	Spatangoida	juvenile	-	-	-	-	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZB0219	Spatangus purpureus		-	-	-	-	-	-	-	-	-	5.9961	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZB0225	Echinocardium pennatifidum		-	-	-	-	-	-	-	37.7742	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZC0012	Enteropneusta		-	-	-	-	-	-	0.1614	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0001	-	-	-	-	-	-	-	-	-	-	-
ZD0002	Ascidiacea	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZG0001	Actinopterygii	eggs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZG0451	Callionymus	juvenile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0094
ZS0195	Cladophora		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix 6 Notable Taxa Recorded Within Samples

Code	Taxa	Qualifiers	Notes
A5050	*Folliculinidae*		(Previously recorded as Lagotia viridis)
G0107	*Oerstedia*		distinguished from Nemertea in APEM data since April 2021
G0133	*Tetrastemma robertianae*		distinguished from Nemertea in APEM data since April 2021
P0092	*Pholoe baltica (sensu Petersen)*		sensu Petersen, 1998
P0094	*Pholoe inornata (sensu Petersen)*		sensu Petersen, 1998
P0276	*Goniadella gracilis*		Listed as non-native
P0358	*Syllis garciai*		Not formally recorded from UK
P0358	*Syllis licheri*		Not formally recorded from UK
P0358	*Syllis parapari*		Not formally recorded from UK
P0358	*Syllis pontxioi*		Not formally recorded from UK
P0458	*Rullierinereis ancornunezi*		Only recently published as a UK species
P0574	*Lumbrineris cingulata*	aggregate	(Previously recorded as *Lumbrineris aniara/cingulata*)
P0751	*Dipolydora caulleryi*	aggregate	May include undescribed species
P0790	*Spio symphyta*		(Previously recorded as *Spio filicornis* agg.); Not formally recorded from UK
P0823	*Aphelochaeta species A*		Possible undescribed species
P0834	*Chaetozone christiei*		May include undescribed species
P0906	*Capitella*		Representative of organic enrichment
P1026	*Scalibregma species A*		Possible undescribed species
P1098	*Owenia*		Probably *O. borealis*
P1174	*Terebellides*		(Previously recorded as *Terebellides stroemii*; might include additional species)
P1218	*Pista cristata (sensu Jirkov)*		sensu Jirkov & Leontovich, 2013
P1264	*Dialychone*		May include undescribed species
R0015	*Sessilia*	juvenile	May include non-native species

Code	Taxa	Qualifiers	Notes
S0011	*Sarsinebalia urgorrii*		Only recently published as a UK species
S0132	*Pontocrates species A*		Possible undescribed species
S0439	*Ampelisca pectenata*		Rarely recorded
S0577	*Aoridae*	female	May include non-native species
S0611	*Crassicorophium crassicorne*		Cryptogenic
S0615	*Monocorophium sextonae*		Listed as non-native
S0640	*Caprella mutica*		Non-native in the UK
W0963	*Ondina warreni*		Rarely recorded
W1698	*Modiolus*	juvenile	Represents priority habitat, if reef-forming
W1702	*Modiolus modiolus*	juvenile	Northern Ireland Biodiversity List; Priority Species (Northern Ireland)
W1715	*Crenella decussata*		Northern species in UK
W1996	*Ensis*	juvenile	May include non-native species
W2072	*Arctica islandica*	juvenile	OSPAR listed; Long lived
ZB0026	*Astropecten irregularis*		Northern Ireland Biodiversity List
ZD0002	*Ascidiacea*	juvenile	May include non-native species

Appendix 7 Distribution of Key Taxa Across Stations

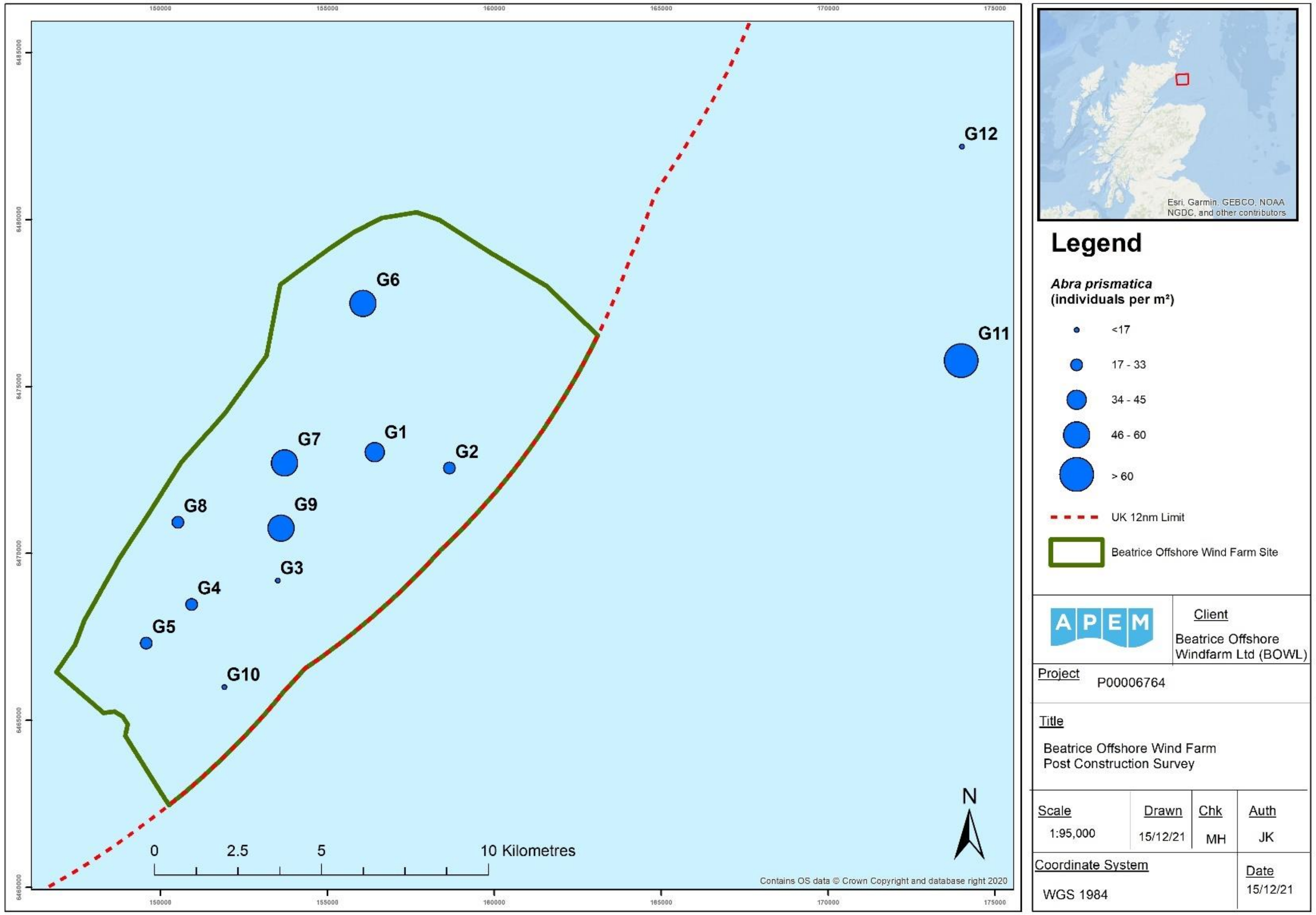

Figure A7.1: Number of *Abra prismatica* per m^2 across stations (mean across replicates).

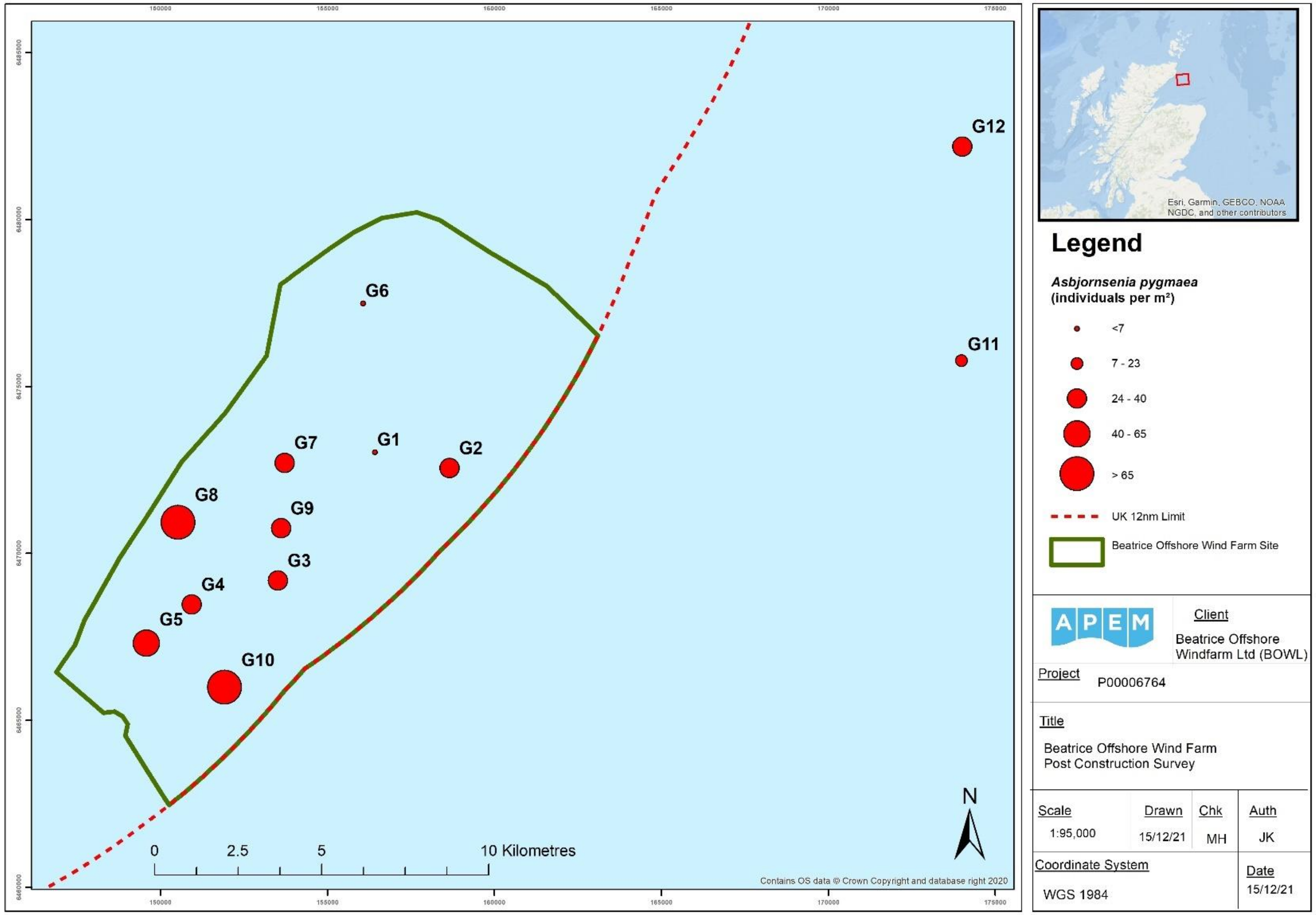

Figure A7.2: Number of *Asbjornsenia pygmaea* per m^2 across stations (mean across replicates).

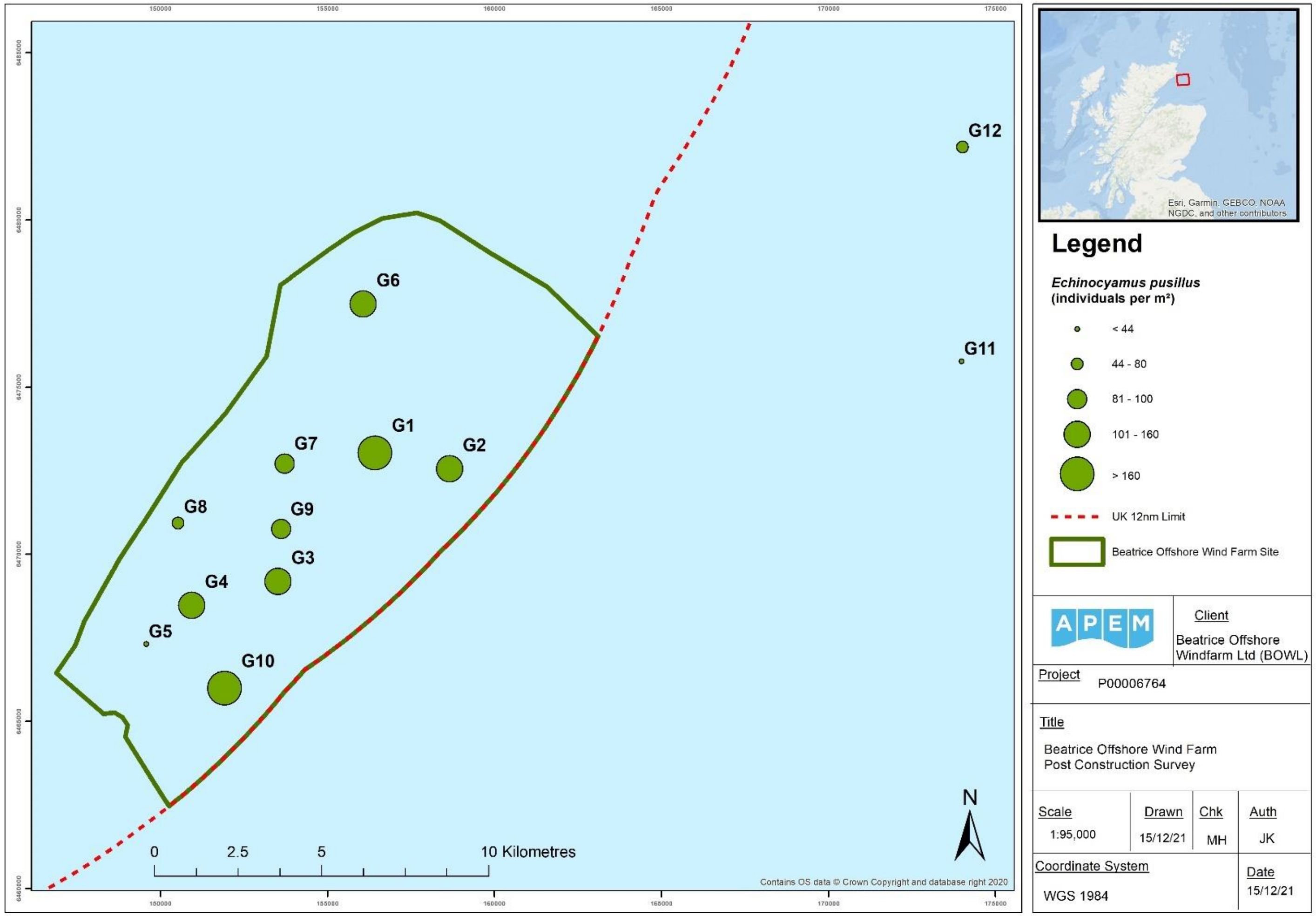

Figure A7.3: Number of *Echinocyamus pusillus* individuals per m^2 across stations (mean across replicates).

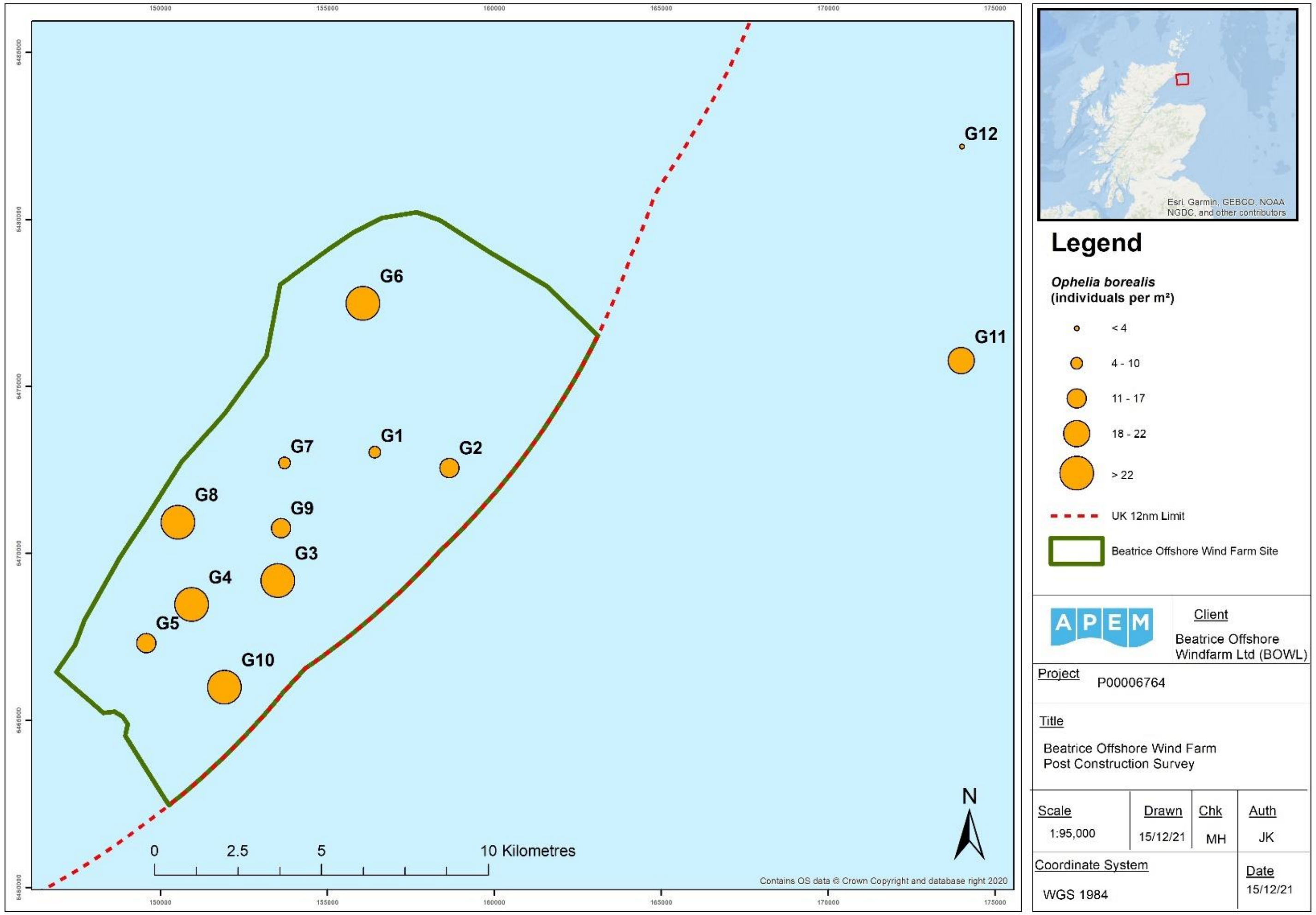

Figure A7.4: ***Ophelia borealis*** **per m^2 across stations (mean across replicates).**

Appendix 8 RELATE Analysis for Influence of juveniles

RELATE

Testing matched resemblance matrices

Resemblance worksheet
Name: BC sim inc. juv
Data type: Similarity
Selection: All

Secondary data: resemblance matrix

Resemblance worksheet
Name: BC sim juv combined
Data type: Similarity
Selection: All

Parameters
Rank correlation method: Spearman

Sample statistic (Rho): 0.99
Significance level of sample statistic: 0.1 %
Number of permutations: 999
Number of permuted statistics greater than or equal to Rho: 0

Appendix 9 SIMPER Outputs

SIMPER

Similarity Percentages – species contributions

One-Way Analysis

Data worksheet
Name: SqRt_Abundance
Data type: Abundance
Sample selection: All
Variable selection All

Parameters
Resemblance: S17 Bray Curtis similarity
Cut off for low contributions: 70.00%

Factor Groups	
Sample	SIMPROF Group
G_01_a	f
G_01_b	f
G_01_c	f
G_02_b	f
G_05_a	f
G_05_b	f
G_05_c	f
G_06_a	f
G_06_b	f
G_06_c	f
G_07_a	f
G_07_b	f
G_07_c	f
G_08_a	f
G_08_b	f
G_08_c	f
G_09_a	f
G_09_b	f
G_09_c	f
G_11_a	f
G_02_a	g
G_02_c	g
G_12_a	g
G_12_b	g

G_03_a	b
G_03_b	b
G_03_c	b
G_04_b	b
G_10_a	b
G_10_b	b
G_10_c	b
G_04_a	a
G_11_b	a
G_04_c	e
G_11_c	d
G_12_c	c

Group f
Average similarity: 49.13

Species	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Cochlodesma praetenue	2.94	6.56	5.61	13.36	13.36
Echinocyamus pusillus	3.18	6.43	3.63	13.1	26.45
Abra prismatica	2.02	4.47	5.58	9.09	35.54
Spisula juvenile	1.54	2.73	1.39	5.56	41.1
Crenella decussata	1.39	2.52	1.82	5.12	46.22
Asbjornsenia pygmaea	1.56	2.51	1.11	5.11	51.33
Chamelea striatula	1.37	2.37	1.39	4.83	56.16
Ophelia borealis	1.18	1.97	1.04	4.02	60.17
Dosinia juvenile	1.12	1.95	1.17	3.96	64.14
Travisia forbesii	1.07	1.86	1.21	3.79	67.93
Gari fervensis	0.95	1.5	0.91	3.06	70.99

Group g
Average similarity: 46.15

Species	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Echinocyamus pusillus	3.25	8.03	11.26	17.39	17.39
Cochlodesma praetenue	1.99	5.06	19.64	10.97	28.36
Spisula juvenile	1.97	3.69	2.91	7.99	36.35
Crenella decussata	1.68	3.66	4.16	7.94	44.28
Abra prismatica	1.54	3.39	5.41	7.34	51.62
Asbjornsenia pygmaea	1.35	2.93	4.58	6.34	57.97
Aricidea cerrutii	1.1	2.72	12.76	5.9	63.87
Spiophanes bombyx	1.04	1.65	0.88	3.57	67.44
Bathyporeia guilliamsoniana	0.75	1.36	0.91	2.95	70.39

Group b
Average similarity: 41.04

Species	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Echinocyamus pusillus	4.03	6.9	4.15	16.81	16.81
Asbjornsenia pygmaea	2.56	4.03	2.59	9.83	26.64
Ophelia borealis	1.78	3.29	4.45	8.02	34.66
Spisula juvenile	1.89	3.21	1.45	7.81	42.47
Aonides paucibranchiata	1.4	2.24	1.39	5.46	47.93
Folliculinidae	1	2.2	6.68	5.36	53.3
Phascolion strombus	1.34	1.87	1.44	4.56	57.86
Thracia villosiuscula	0.98	1.68	1.49	4.1	61.96
Pseudonotomastus southerni	1	1.33	0.9	3.25	65.21
Glycera lapidum aggregate	1.14	1.22	0.91	2.97	68.18
Dosinia juvenile	0.89	1.11	0.91	2.7	70.88

Group a
Average similarity: 42.81

Species	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Phascolion strombus	4	2.8	SD=0!	6.55	6.55
Aponuphis bilineata	3.38	1.91	SD=0!	4.47	11.02
Pista cristata (sensu Jirkov)	3.22	1.77	SD=0!	4.14	15.16
Pholoe inornata (sensu Petersen)	1.98	1.25	SD=0!	2.93	18.09
Syllis parapari	1.87	1.25	SD=0!	2.93	21.01
Aonides paucibranchiata	1.98	1.25	SD=0!	2.93	23.94
Notomastus	1.87	1.25	SD=0!	2.93	26.87
Pseudonotomastus southerni	2.37	1.25	SD=0!	2.93	29.8
Lanice conchilega	2.09	1.25	SD=0!	2.93	32.72
Nemertea	1.57	1.02	SD=0!	2.39	35.12
Glycera lapidum aggregate	2.37	1.02	SD=0!	2.39	37.51
Syllis pontxioi	1.41	1.02	SD=0!	2.39	39.9
Lumbrineris cingulata aggregate	1.83	1.02	SD=0!	2.39	42.29
Aricidea cerrutii	1.57	1.02	SD=0!	2.39	44.68
Aurospio banyulensis	1.71	1.02	SD=0!	2.39	47.07
Phisidia aurea	1.71	1.02	SD=0!	2.39	49.46
Polycirrus	2.29	1.02	SD=0!	2.39	51.85
Sessilia juvenile	1.71	1.02	SD=0!	2.39	54.24
Crenella decussata	1.71	1.02	SD=0!	2.39	56.63
Asbjornsenia pygmaea	1.41	1.02	SD=0!	2.39	59.02
Thracia juvenile	1.71	1.02	SD=0!	2.39	61.41
Cochlodesma praetenue	1.57	1.02	SD=0!	2.39	63.8

Echinocyamus pusillus	3.31	1.02	SD=0!	2.39	66.19
Folliculinidae	1	0.72	SD=0!	1.69	67.88
Animalia eggs	1	0.72	SD=0!	1.69	69.57
Cliona	1	0.72	SD=0!	1.69	71.26

Group e
Less than 2 samples in group

Group d
Less than 2 samples in group

Group c
Less than 2 samples in group

Appendix 10 RELATE and BIO-ENV Outputs

RELATE

Testing matched resemblance matrices

Resemblance worksheet
Name: B – C Sim
Data type: Similarity
Selection: All

Secondary data: Resemblance/model matrix

Resemblance worksheet
Name: Euclidian Distance
Data type: Distance
Selection: All

Parameters
Rank correlation method: Spearman

Sample statistic (Rho): 0.642
Significance level of sample statistic: 0.1%
Number of permutations: 999
Number of permuted statistics greater than or equal to Rho: 0

BEST

Biota and/or Environment matching

Resemblance worksheet
Name: B-C Sim
Data type: Similarity
Selection: All

Data worksheet
Name: P6764_PSA_Sediment_Type
Data type: Environmental
Sample selection: All
Variable selection: All

Parameters
Rank correlation method: Spearman
Method: BIOENV
Maximum number of variables: 1

Analyse between: Samples
Resemblance measure: D1 Euclidean distance

Global Test
Sample statistic (Rho): 0.701
Significance level of sample statistic: 1%
Number of permutations: 99 (Random sample)
Number of permuted statistics greater than or equal to Rho: 0

Variables
V Coarse Gravel
Coarse Gravel
Medium Gravel
Fine Gravel
V Fine Gravel
V Coarse Sand
Coarse Sand
Medium Sand
Fine Sand
V Fine Sand
V Coarse Silt
Coarse Silt
Medium Silt
Fine Silt
V Fine Silt
Clay

Best results		
No. Vars	**Corr.**	**Selections**
1	0.701	V Coarse Sand
1	0.654	V Fine Gravel
1	0.630	Coarse Sand
1	0.548	Fine Gravel
1	0.543	Medium Sand
1	0.395	Medium Gravel
1	0.340	Fine Sand
1	0.334	Coarse Silt
1	0.322	Medium Silt
1	0.316	Fine Silt

Appendix 11 SIMPER Outputs 2015 Pre-construction vs. 2021 Post-construction

SIMPER

Similarity Percentages – species contributions

One-Way Analysis

Data worksheet
Name: SqRt
Data type: Abundance
Sample selection: All
Variable selection: All

Parameters
Resemblance: S17 Bray Curtis similarity
Cut off for low contributions: 70.00%

Factor Groups	
Sample	**Development**
G01A	POST
G01B	POST
G01C	POST
G02A	POST
G02B	POST
G02C	POST
G03A	POST
G03B	POST
G03C	POST
G04A	POST
G04B	POST
G04C	POST
G05A	POST
G05B	POST
G05C	POST
G06A	POST
G06B	POST
G06C	POST
G07A	POST
G07B	POST
G07C	POST
G08A	POST

Factor Groups	
Sample	**Development**
G08B	POST
G08C	POST
G09A	POST
G09B	POST
G09C	POST
G10A	POST
G10B	POST
G10C	POST
G11A	POST
G11B	POST
G11C	POST
G12A	POST
G12B	POST
G12C	POST
G01A	PRE
G01B	PRE
G01C	PRE
G02A	PRE
G02B	PRE
G02C	PRE
G03A	PRE
G03B	PRE
G03C	PRE
G04A	PRE
G04B	PRE
G04C	PRE
G05A	PRE
G05B	PRE
G05C	PRE
G06A	PRE
G06B	PRE
G06C	PRE
G07A	PRE
G07B	PRE
G07C	PRE
G08A	PRE
G08B	PRE
G08C	PRE
G09A	PRE
G09B	PRE
G09C	PRE

Factor Groups	
Sample	**Development**
G10A	PRE
G10B	PRE
G10C	PRE
G11A	PRE
G11B	PRE
G11C	PRE
G12A	PRE
G12B	PRE
G12C	PRE

Group POST

Average similarity: 37.73

Species	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Echinocyamus pusillus	3.34	6.24	2.92	16.53	16.53
Cochlodesma praetenue	2.13	3.51	1.29	9.3	25.83
Abra prismatica	1.64	2.78	1.48	7.38	33.21
Spisula juvenile	1.61	2.71	1.45	7.18	40.39
Asbjornsenia pygmaea	1.62	2.38	1.17	6.31	46.69
Ophelia borealis	1.22	1.91	1.11	5.06	51.75
Crenella decussata	1.19	1.69	1.01	4.47	56.23
Dosinia juvenile	0.85	1.14	0.77	3.02	59.24
Folliculinidae	0.72	1.1	0.97	2.92	62.17
Chamelea striatula	0.89	1.04	0.66	2.75	64.92
Animalia eggs	0.64	0.85	0.78	2.25	67.16
Travisia forbesii	0.68	0.75	0.58	1.99	69.15
Gari fervensis	0.66	0.69	0.54	1.82	70.97

Group PRE

Average similarity: 37.72

Species	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Cochlodesma praetenue	2.42	4.09	1.52	10.83	10.83
Ophiuridae juvenile	2.26	3.48	1.68	9.24	20.07

Species	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Abra prismatica	2.18	3.35	1.46	8.87	28.94
Echinocyamus pusillus	1.94	2.97	1.89	7.88	36.82
Asbjornsenia pygmaea	1.7	2.58	1.17	6.84	43.66
Spisula juvenile	1.34	1.89	1.15	5.02	48.67
Spiophanes bombyx	1.1	1.36	0.91	3.61	52.29
Ophelia borealis	1	1.23	0.82	3.25	55.54
Nemertea	0.92	1.09	0.88	2.88	58.42
Chaetozone christiei	0.86	0.97	0.74	2.56	60.98
Polycirrus	0.97	0.91	0.7	2.41	63.39
Edwardsiidae	0.83	0.85	0.72	2.24	65.64
Nephtys cirrosa	0.66	0.75	0.63	1.99	67.63
Crenella decussata	0.85	0.74	0.61	1.96	69.59
Chamelea striatula	0.71	0.71	0.58	1.88	71.48

Group POST & PRE
Average dissimilarity: 66.87

	Group POST	Group PRE				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
Ophiuridae juvenile	0.46	2.26	2.14	1.6	3.2	3.2
Echinocyamus pusillus	3.34	1.94	1.88	1.15	2.82	6.02
Cochlodesma praetenue	2.13	2.42	1.53	1.29	2.28	8.3
Abra prismatica	1.64	2.18	1.38	1.38	2.07	10.37
Asbjornsenia pygmaea	1.62	1.7	1.35	1.38	2.01	12.38
Crenella decussata	1.19	0.85	1.12	1.2	1.68	14.06
Spisula juvenile	1.61	1.34	1.1	1.17	1.64	15.7
Polycirrus	0.63	0.97	1.03	1.17	1.54	17.24
Spiophanes bombyx	0.63	1.1	1.02	1.17	1.53	18.77
Chamelea striatula	0.89	0.71	1.02	1.14	1.52	20.29
Ophelia borealis	1.22	1	0.98	1.13	1.47	21.76
Dosinia juvenile	0.85	0.32	0.94	1.09	1.4	23.17
Chaetozone christiei	0.34	0.86	0.91	1.12	1.37	24.53
Edwardsiidae	0.25	0.83	0.9	1.08	1.35	25.88
Nemertea	0.63	0.92	0.88	1.17	1.32	27.19
Phascolion strombus	0.88	0.15	0.88	0.95	1.31	28.51
Gari fervensis	0.66	0.64	0.88	1.08	1.31	29.82
Travisia forbesii	0.68	0.61	0.87	1.08	1.31	31.13

	Group POST	Group PRE				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
Aponuphis bilineata	0.59	0.6	0.86	1.02	1.28	32.41
Nematoda	0.45	0.67	0.84	0.81	1.25	33.66
Aonides paucibranchiata	0.63	0.59	0.82	1.05	1.23	34.89
Owenia	0.47	0.73	0.81	1.07	1.21	36.1
Folliculinidae	0.72	0	0.79	1.45	1.19	37.29
Amphiuridae juvenile	0.52	0.58	0.79	1.01	1.18	38.47
Scoloplos armiger	0.54	0.61	0.78	1.05	1.16	39.63
Bathyporeia guilliamsoniana	0.49	0.6	0.76	1.02	1.14	40.77
Spio goniocephala	0.25	0.63	0.76	0.97	1.13	41.9
Nephtys cirrosa	0.34	0.66	0.75	1.04	1.13	43.03
Aricidea cerrutii	0.49	0.52	0.73	0.97	1.1	44.13
Glycera lapidum aggregate	0.54	0.43	0.71	0.9	1.06	45.19
Animalia eggs	0.64	0	0.7	1.22	1.04	46.23
Leiochone	0.47	0.37	0.66	0.87	0.99	47.22
Nephtys juvenile	0.49	0.3	0.65	0.92	0.98	48.2
Lanice conchilega	0.5	0.4	0.65	0.93	0.98	49.18
Exogone verugera	0.34	0.33	0.59	0.77	0.89	50.07
Pista cristata (sensu Jirkov)	0.52	0.21	0.57	0.77	0.85	50.92
Thracia juvenile	0.4	0.3	0.55	0.84	0.83	51.75
Bathyporeia elegans	0.34	0.27	0.55	0.75	0.82	52.57
Parexogone hebes	0.2	0.45	0.55	0.73	0.82	53.39
Sthenelais limicola	0.08	0.45	0.54	0.75	0.81	54.2
Ascidiacea juvenile	0.22	0.39	0.54	0.78	0.8	55.01
Gattyana cirrhosa	0.23	0.43	0.53	0.79	0.79	55.79
Goodallia triangularis	0.21	0.34	0.52	0.61	0.78	56.58
Grania	0.11	0.49	0.52	0.78	0.77	57.35
Eucratea loricata	0.25	0.39	0.49	0.85	0.74	58.09
Goniada maculata	0.21	0.34	0.47	0.74	0.71	58.8
Harmothoe glabra	0.19	0.31	0.45	0.71	0.67	59.47
Phaxas pellucidus	0.08	0.37	0.44	0.72	0.66	60.13
Thracia villosiuscula	0.27	0.21	0.44	0.69	0.65	60.78
Spisula elliptica	0.22	0.21	0.42	0.65	0.63	61.4
Orbiniidae juvenile	0	0.38	0.4	0.63	0.6	62
Scolelepis korsuni	0.28	0.14	0.39	0.68	0.58	62.58
Urothoe marina	0.16	0.27	0.39	0.55	0.58	63.16
Pseudonotomastus southerni	0.35	0.11	0.38	0.59	0.58	63.74
Syllis parapari	0.29	0.21	0.37	0.68	0.56	64.3
Hippomedon denticulatus	0.12	0.22	0.35	0.48	0.52	64.82
Notomastus	0.1	0.31	0.35	0.56	0.52	65.34

	Group POST	Group PRE				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
Arctica islandica juvenile	0.1	0.22	0.34	0.54	0.51	65.85
Timoclea ovata	0.14	0.19	0.33	0.52	0.49	66.34
Orbinia sertulata	0.28	0	0.32	0.6	0.48	66.82
Argissa hamatipes	0.21	0.12	0.31	0.56	0.47	67.29
Lumbrineris cingulata aggregate	0.24	0.14	0.31	0.61	0.46	67.75
Syllis pontxioi	0.11	0.27	0.31	0.5	0.46	68.22
Eumida ockelmanni	0	0.31	0.3	0.58	0.46	68.67
Hyalinoecia tubicola	0.23	0.03	0.28	0.5	0.43	69.1
Fabulina fabula	0.25	0	0.28	0.47	0.42	69.52
Glycera oxycephala	0.23	0.03	0.28	0.52	0.42	69.93
Antalis entalis	0.22	0.06	0.27	0.56	0.41	70.34

Appendix 12 ANOSIM Outputs 2015 Pre-construction vs. 2021 Post-construction

ANOSIM
Analysis of Similarities
One-Way - A

Resemblance worksheet
Name: BC sim
Data type: Similarity
Selection: All

Factor Values
Factor: Stations
POST
PRE

Global Test
Sample statistic (R): 0.245
Significance level of sample statistic: 0.1%
Number of permutations: 999 (random sample from a large number)
Number of permuted statistics greater than or equal to Global R: 0

Factor Groups	
Sample	**Development**
G01A	POST
G01B	POST
G01C	POST
G02A	POST
G02B	POST
G02C	POST
G03A	POST
G03B	POST
G03C	POST
G04A	POST
G04B	POST
G04C	POST
G05A	POST
G05B	POST
G05C	POST
G06A	POST
G06B	POST

Factor Groups	
Sample	**Development**
G06C	POST
G07A	POST
G07B	POST
G07C	POST
G08A	POST
G08B	POST
G08C	POST
G09A	POST
G09B	POST
G09C	POST
G10A	POST
G10B	POST
G10C	POST
G11A	POST
G11B	POST
G11C	POST
G12A	POST
G12B	POST
G12C	POST
G01A	PRE
G01B	PRE
G01C	PRE
G02A	PRE
G02B	PRE
G02C	PRE
G03A	PRE
G03B	PRE
G03C	PRE
G04A	PRE
G04B	PRE
G04C	PRE
G05A	PRE
G05B	PRE
G05C	PRE
G06A	PRE
G06B	PRE
G06C	PRE
G07A	PRE
G07B	PRE
G07C	PRE
G08A	PRE

Factor Groups	
Sample	**Development**
G08B	PRE
G08C	PRE
G09A	PRE
G09B	PRE
G09C	PRE
G10A	PRE
G10B	PRE
G10C	PRE
G11A	PRE
G11B	PRE
G11C	PRE
G12A	PRE
G12B	PRE
G12C	PRE