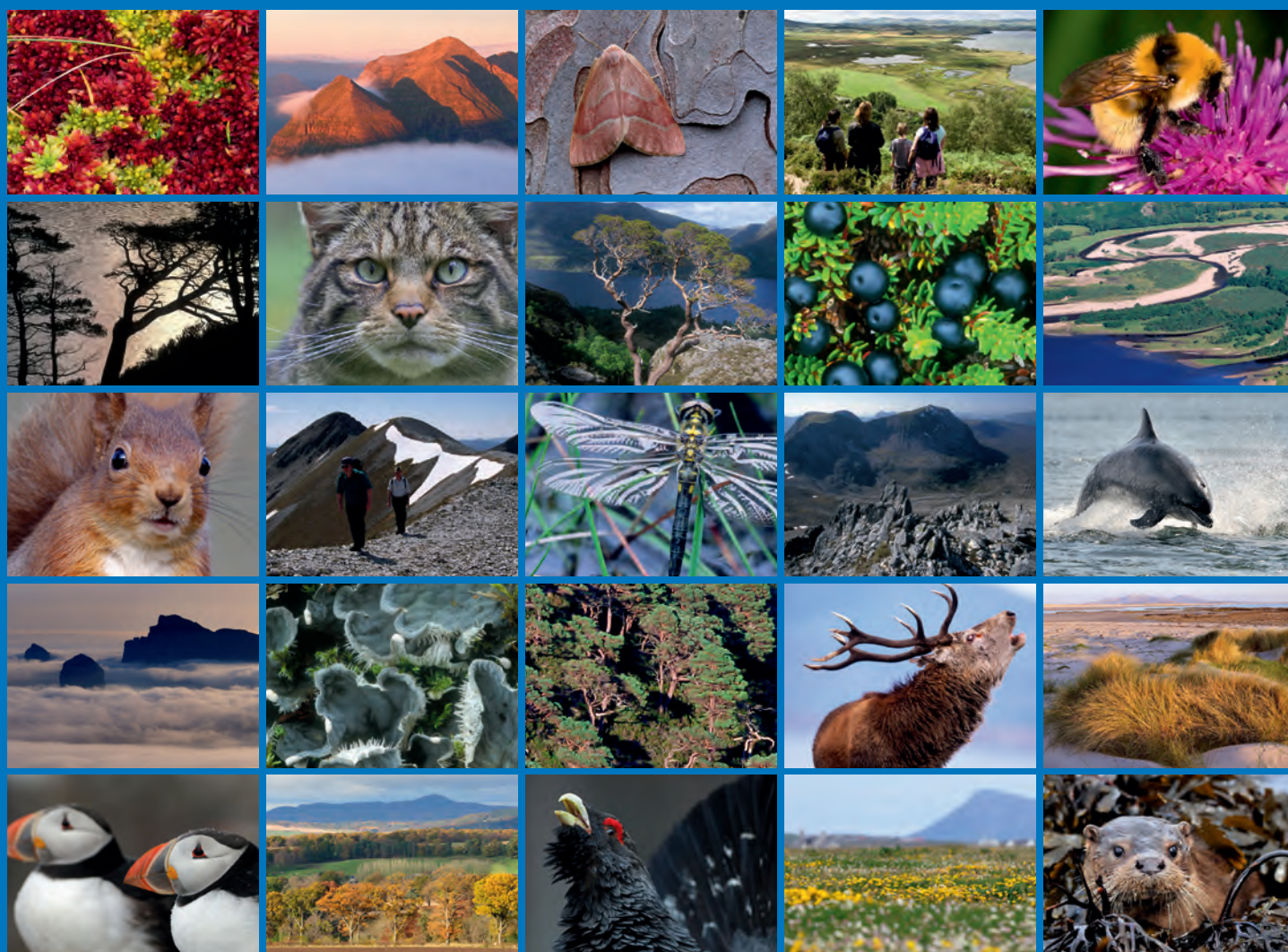


Infaunal and PSA analyses of benthic samples collected from around the Isle of Arran, Loch Fyne and Orkney in July and August 2015





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COMMISSIONED REPORT

Commissioned Report No. 945

**Infaunal and PSA analyses of benthic
samples collected from around the Isle of
Arran, Loch Fyne and Orkney in July and
August 2015**

For further information on this report please contact:

Flora Kent
Scottish Natural Heritage
Inverdee House
ABERDEEN
AB11 9QA
Telephone: 01224 266522
E-mail: flora.kent@snh.gov.uk

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COMMISSIONED REPORT

Summary

Infaunal and PSA analyses of benthic samples collected from around the Isle of Arran, Loch Fyne and Orkney in July and August 2015

Commissioned Report No. 945

Project No: 015846

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Marine survey; MPA; South Arran; Loch Fyne; Wyre Sound; protected features; PMF; seabed habitats; infauna; PSA.

Background

Provisions to designate new Marine Protected Areas (MPAs) within Scottish waters have been introduced through the Marine (Scotland) Act 2010 and the UK Marine and Coastal Access Act 2009. Management measures were announced by Marine Scotland in 2015 covering 11 MPAs designated under the Marine (Scotland) Act 2010, and nine Special Areas of Conservation (SACs), designated under the EU Habitats Directive. Sampling at South Arran and Upper Loch Fyne and Loch Goil Nature Conservation MPAs was undertaken in 2015 because they support a wide range of protected features, including those with a 'Recover' conservation objective.

Seabed surveys were conducted using drop down video, grab sampling and diver cores. This report presents the analysis of the grab samples collected during research cruises conducted by SNH during July and August 2015 on board the vessel *MRV Seol Mara*. In total 36 grab samples were collected from South Arran and 17 grab samples collected from Loch Fyne along with 28 core samples from flame shell beds in Loch Fyne. Subsequently, additional core samples from maerl beds in Wyre Sound (16 samples) were added to the project specification. Precision Marine Survey Ltd. were commissioned to undertake faunal analysis and particle size analysis (PSA) of the samples and produce a brief interpretative report to characterise the benthic infaunal communities.

Main findings

- PSA of the seabed samples highlighted a variety of sediment types ranging from sandy-muds through to mixed gravelly-sands and sandy-gravels with the muddiest habitats located in the upper reaches of Loch Fyne and off the coast of Arran.
- Species diversity was also highly variable (for example, between 13 and 103 taxa per 0.1 m² in Loch Fyne). Highest diversities and species richness were recorded in the coarse/mixed sediments off Arran (up to 101 taxa per 0.1m²) and in flame shell (*Limaria hians*) beds in Loch Fyne (up to 103 taxa per 0.1m²). High diversities were also recorded in the Wyre Sound maerl cores (up to 86 taxa per sample).

- The Arran benthic samples were dominated by taxa such as nematode worms, *Abra alba*, *Owenia fusiformis*, juvenile Amphiuridae spp., *Gouldia minima*, *Galathowenia oculata* and *Mediomastus fragilis*. The Loch Fyne benthic grab samples were dominated by species including *Nereimyra punctata*, *Nematoda*, *Spirobranchus triqueter*, *Ophiothrix fragilis*, *Onoba semicostata*, *Ophiocomina nigra*, *Pholoe inornata*, juvenile *Modiolus modiolus*, *Gouldia minima*, *Sphaerodorum gracilis* and *Limaria hians*.
- The Loch Fyne diver core samples from the Otter Narrows *Limaria* bed were dominated by *Nematoda* spp., *Balanus balanus*, *Ophiocomina nigra*, *Onoba semicostata*, *Pholoe inornata*, *Verruca stroemia*, juvenile *Modiolus modiolus*, *Alvania punctura* and *Thracia villosiuscula*. *Limaria hians* were recorded in 11 of the 28 samples.
- The maerl bed diver cores in Wyre Sound, Orkney, were dominated by *Leptochiton cancellatus*, juvenile *Modiolus modiolus*, *Nematoda* spp., *Amphipholis squamata*, *Socarnes erythrophthalmus*, *Vaunthompsonia cristata*, *Uromunna petiti*, *Animoceradocus semiserratus* and *Caprella acanthifera*.
- A variety of biotopes were recorded from the surveys including **SS.SMu.CFiMu**, **SS.SCS.ICS**, **SS.SMx.IMx**, **SS.SMx.CMx** and **SS.SMu.CSaMu.AfiIMysAnit** at Arran and **SS.SMu.CFiMu**, **SS.SMx.IMx.Lim**, **SS.SMx.IMx** and **SS.SMx.CMx.OphMx** in Loch Fyne.
- Examples of **SS.SMu.CFiMu** (Circalittoral fine mud) from Arran and Loch Fyne are likely to include examples of burrowing mud biotopes (e.g. **SS.SMu.CFiMu.MegMax** or **SS.SMu.CFiMu.SpnMeg**) although video data would be required to confirm this. Burrowed mud is a protected feature in the South Arran Nature Conservation MPA and the Upper Loch Fyne and Loch Goil NC MPA. The flame shell biotope **SS.SMx.IMx.Lim** is also a protected feature of the Upper Loch Fyne and Loch Goil NC MPA and five additional records for this biotope were recorded in Loch Fyne during the benthic survey.
- Additional information on the species composition and variability within the *Limaria* beds at Otter Spit in Loch Fyne were obtained from diver cores, which highlighted the high levels of diversity associated with this habitat. Length, width and height of *Limaria* collected from the permanent dive transects were also recorded.
- Specimens of maerl (a red seaweed with a hard, chalky skeleton) were collected at 30 stations/samples. Abundances of live maerl were too low to qualify as records of maerl bed biotopes at Arran and Loch Fyne whilst maerl bed biotopes (**SS.SMp.Mrl**) were recorded in Wyre Sound. Measurements of live maerl fragments in the benthic grab and diver core samples were also undertaken.
- The ocean quahog *Arctica islandica* (a protected feature within both of the NC MPAs sampled within the Clyde Sea in this study) was recorded at five stations off Arran.

For further information on this project contact:

Flora Kent, Scottish Natural Heritage, Scottish Natural Heritage, Inverdee House, Aberdeen, AB11 9QA.

Tel: 01224 266522 or flora.kent@snh.gov.uk

For further information on the SNH Research & Technical Support Programme contact:

Knowledge & Information Unit, Scottish Natural Heritage, Great Glen House, Inverness, IV3 8NW.

Tel: 01463 725000 or research@snh.gov.uk

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1. INTRODUCTION

In July and August 2015 SNH undertook a survey to improve knowledge of the occurrence and distribution of protected seabed habitats within the South Arran (ARR) and Upper Loch Fyne and Loch Goil (LFG) Nature Conservation MPAs. A survey was also carried out in the waters around Wyre and Rousay in Orkney for a Heriot-Watt University PhD project where SNH are the case studentship partner.

Provisions to designate new Marine Protected Areas (MPAs) within Scottish waters have been introduced through the Marine (Scotland) Act 2010 and the UK Marine and Coastal Access Act 2009.

New fisheries management measures were announced by Marine Scotland in 2015 covering 11 NC MPAs designated under the Marine (Scotland) Act 2010 and nine Special Areas of Conservation (SACs) designated under the EU Habitats Directive. The South Arran and Upper Loch Fyne and Loch Goil NC MPAs were chosen for survey in 2015 because they support a wide range of protected features, including those with a 'Recover' conservation objective. The primary aim of the 2015 survey was to establish current baseline conditions for a range of the features present within the sites, against which future change can be determined.

Precision Marine Survey Limited were contracted by SNH to undertake the analyses of 53 grab samples which were collected on board the vessel *MRV Seol Mara* and 28 core samples collected during an SNH diver survey. In total 36 grab samples were collected from South Arran and 17 samples collected from Loch Fyne along with 28 core samples from flame shell (*Limaria hians*) beds in Loch Fyne. Subsequently, additional core samples from maerl beds in Wyre Sound and off Tingwall in Orkney (16 samples) were added to the project specification. Analyses included infaunal identification, particle size analysis (PSA) and the assignment of a biotope to each sample. The location of the survey areas for the 2015 surveys is provided in Figure 1.

In addition to the collection of infaunal samples, divers assessed the extent of the flame shell bed at Otter Spit in Loch Fyne and permanent transects were established in five locations to enable relocation of the stations. It is expected that the data presented here will be used for comparison with data collected in the future.

Drop down video and still photographic imagery were also collected during the survey, and results of their analysis will be reported separately.

2. METHODS

2.1 Infaunal grab sample collection

The Clyde Sea grab sampling was undertaken between the 12th - 21st of July 2015 around the Isle of Arran and in Loch Fyne, off western Scotland (Figures 2 and 3). Water depths at the benthic grab stations ranged from 3.9 m to 91.9 m BCD. Infaunal and PSA samples were collected from 53 stations at South Arran and Loch Fyne, and at each station a single grab sample was collected using a 0.1 m² Day grab. PSA samples were not collected from three sites in Loch Fyne (FG10, FG24 and FG28) resulting in a total of 53 infaunal samples and 50 PSA samples.

Stations in South Arran were randomly selected within depth and habitat stratified sampling boxes (see clustered stations in Figure 2) to allow for a mixed model approach to analysis in the future, where the sample box can be used as a random factor to account for spatial autocorrelation (Millar and Anderson, 2004). Similarly, stations in Orkney were selected

where abiotic data such as flow rate are also available. The biological community data will feed into models to show the relationship between flow rate and diversity which is beyond the scope of this report.

Grab sample station positioning in Loch Fyne was informed by the results of previous studies and designed to increase confidence in our knowledge of feature extent and to validate biotopes assigned to towed video in the same area. Grab sampling was targeted outside the previously mapped boundaries of the flame shell bed in Otter Narrows to minimise disturbance to the bed (where diver cores were used). It is hoped that potential recovery of the bed here can be monitored using grab sampling techniques to register sparse *Limaria* presence in the sediment (and derive measures of *Limaria* abundance and size frequency) prior to the development of a conspicuous byssal carpet. Monitoring of the return of adult *L. hians* and the associated byssal turf development would subsequently be carried out by diving (Moore, 2014). For the purposes of this report some statistical analysis of community measures was carried out to describe similarity between sites and to help assign biotopes, however, given that no true replicates were taken, the conclusions regarding differences between sites are limited.

Once the grab was recovered on board a small sub-sample was removed for separate particle size analysis (PSA) and stored in a plastic bag before being frozen. Each infaunal sample was passed through a 1 mm mesh sieve. The sieve residue was retained and fixed using buffered formalin. A summary of the sampling details for the survey is provided in Annex 1 and maps showing the locations of the sampling stations are given in Figures 2 and 3.

2.2 Diver sample collection

Diver core samples were collected from the *Limaria* bed in Loch Fyne from the 10th to the 12th of August 2015 at 6.8 m to 10.7 m BCD. Core samples were collected by divers along five 25 m transects at Otter Sound (Table 2) using a standard diver core (110 mm diameter cores driven in to 20 cm depth of sediment). Three permanent transect markers (yellow steel posts - see Figure 1) were hammered into the seabed at the start, middle and end of the transects. The posts were marked with 1, 2 and 3 horizontal black stripes to represent their position along the transect. Six replicate core samples were taken at intervals along the transects (at 2.75, 6.75, 10.75, 14.75, 18.75 and 22.75 m) unless core lids were broken at the surface in which case less replicates were used. In addition to the core samples, divers carried out cell frequency counts of *Limaria* nest material from 0.25 m² quadrats at 1 m intervals along the transects. Divers also estimated *Limaria* nest percentage cover at eight spot dives. Sample locations are provided in Figure 4 and Annex 1.

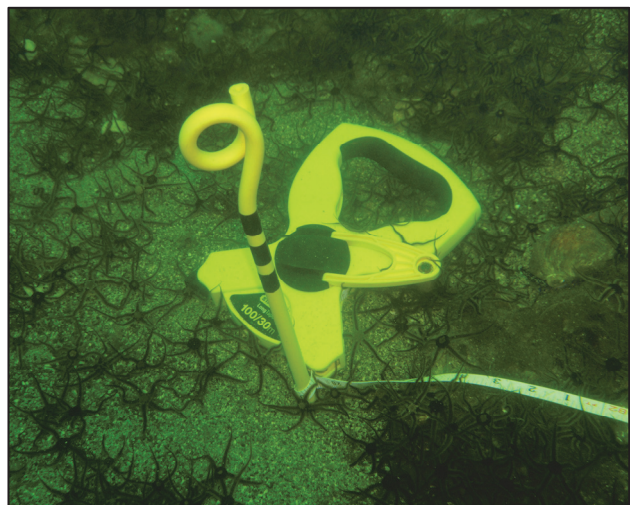


Figure 1. Example of a transect marker at the end of a transect.

The additional core samples collected in Wyre Sound for processing under this project were collected using standard 110 mm diameter diver core (20 cm depth). Four replicate cores were taken at three sites in Wyre Sound and one off Tingwall in Orkney (Figure 5 and Annex 1). Sample locations were haphazardly selected on the top of a maerl wave formation where live maerl had accumulated.

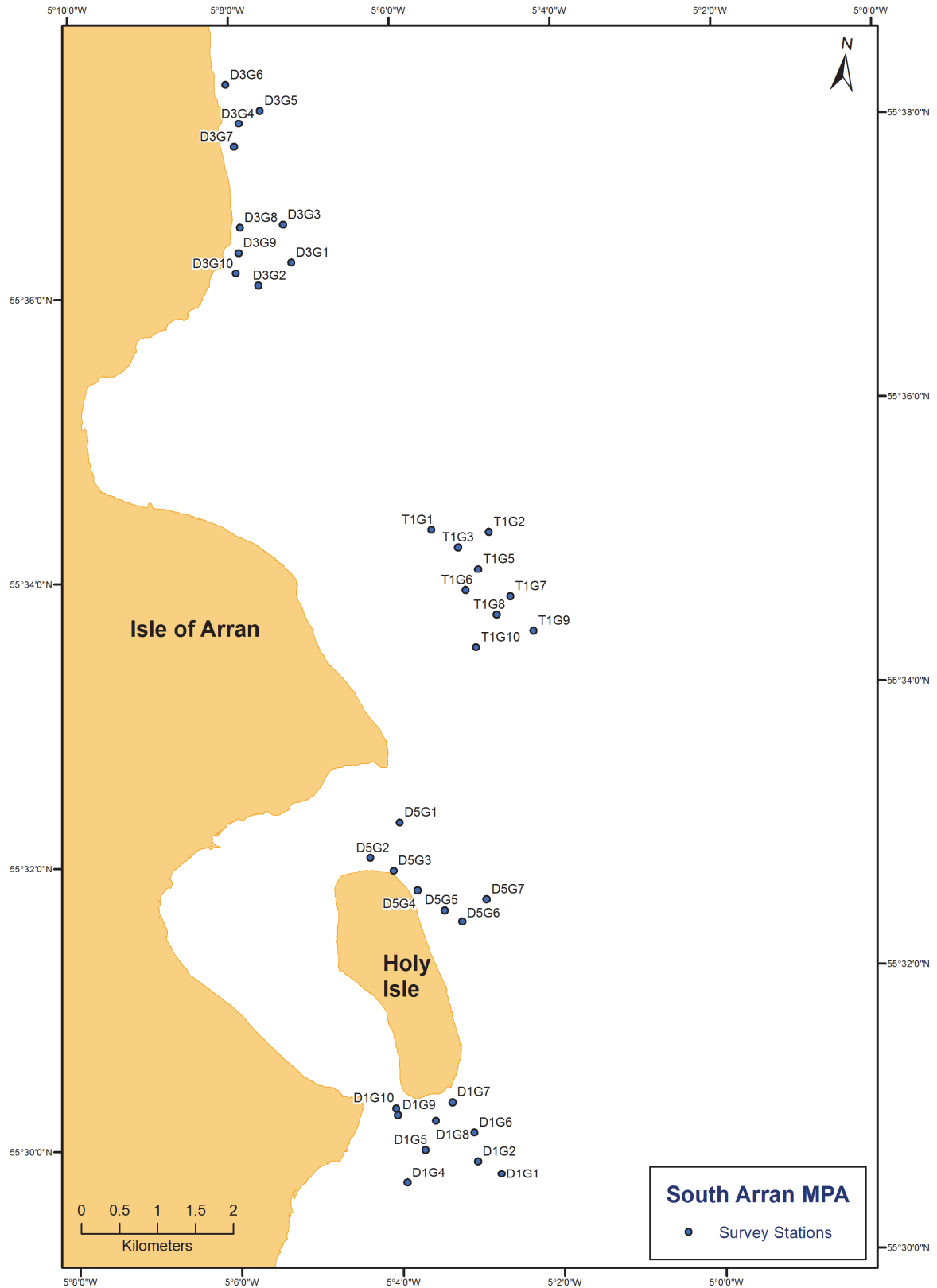


Figure 2. Map of 2015 infaunal grab sample stations at South Arran MPA. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2016. All rights reserved. Ordnance Survey Licence number 100017908.

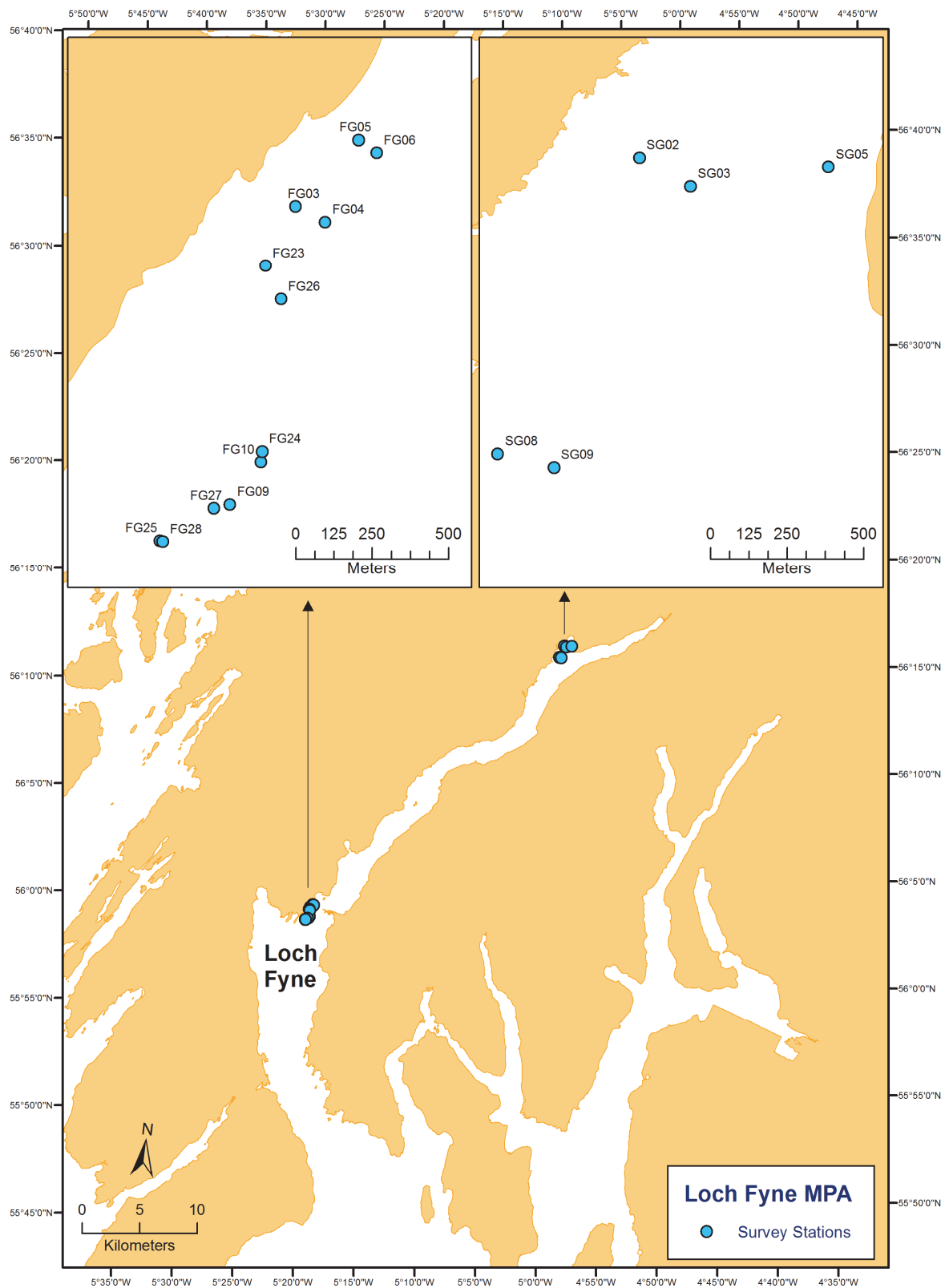


Figure 3. Map of 2015 infaunal grab sample stations at Upper Loch Fyne and Goil MPA. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2016. All rights reserved. Ordnance Survey Licence number 100017908.

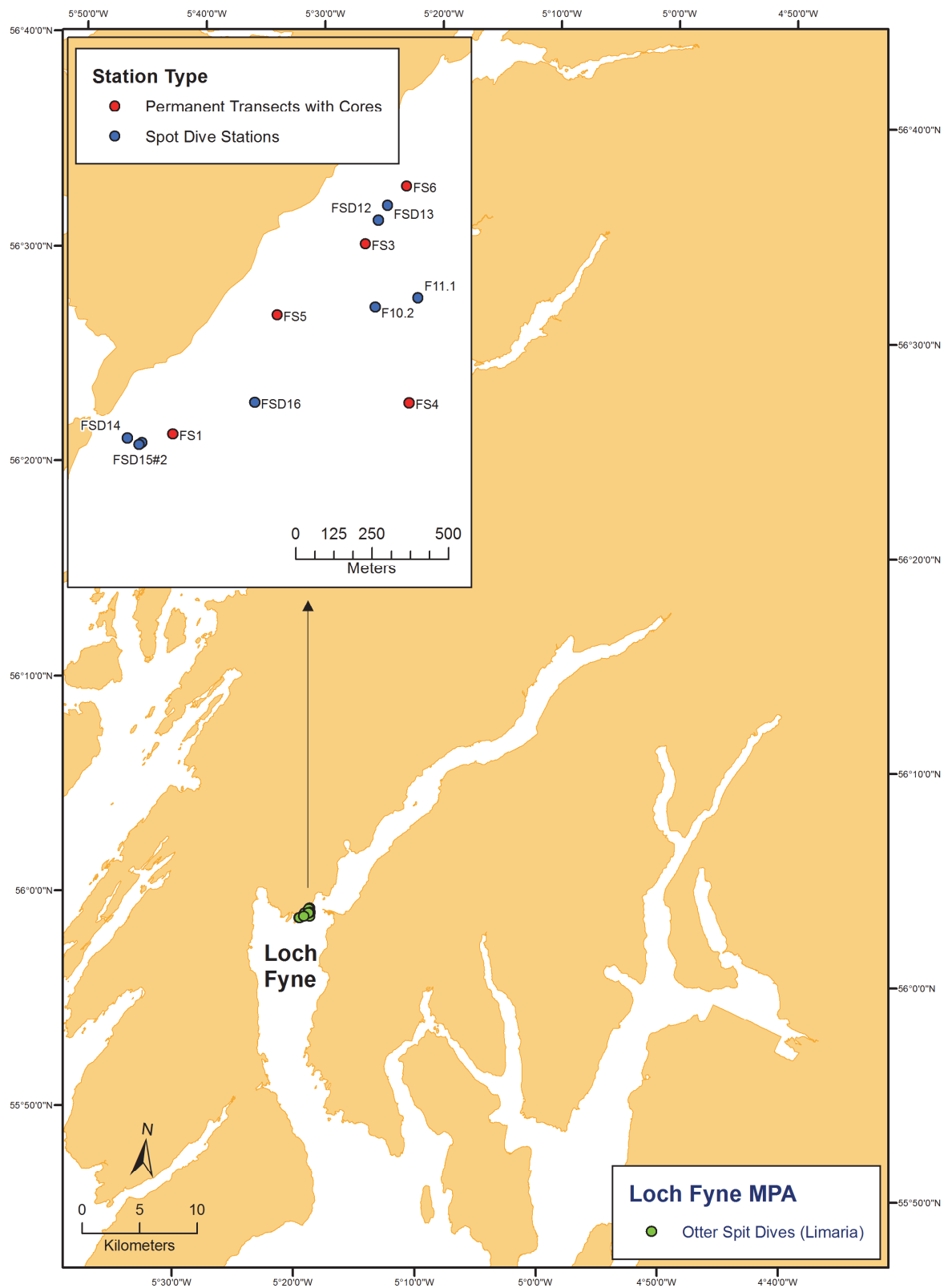


Figure 4. Map of 2015 dive core sample stations and spot dive locations at Upper Loch Fyne and Goil MPA. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2016. All rights reserved. Ordnance Survey Licence number 100017908.



Figure 5. Map of 2015 dive core sample stations at the Wyre and Rousay Sound MPA. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2015. All rights reserved. Ordnance Survey Licence number 100017908.

2.3 Laboratory Processing

All laboratory methodologies were based on best practice (Thomas, 2001; Rees *et al.*, 1990; Rees 1999; Cooper & Rees 2002; Worsfold & Hall, 2010; Ware & Kenny, 2011). In addition Precision Marine Survey Limited is a member of the National Marine Biological and Analytical Quality Control scheme (NMBAQC). Two experienced members of staff undertook all the sieving, sorting work and sample description with a further member of staff carrying out standard sorting quality control. Experienced taxonomists carried out the identification of the sorted fauna, with an additional member of staff carrying out quality control for faunal identification. A standard sample tracking procedure was followed throughout the analysis period.

Prior to species identification each sample was washed through a nest of sieves to remove the preservative and partition the sample for ease of sorting. The smallest mesh aperture was 1 mm and larger sieves (5 mm or 10 mm) were also used as required to separate larger animals or coarser sediment residue. The residue from each sieve was then gently washed into separate 100 mm petri dishes for subsequent identification. For larger samples the sieve residue was put into a separate bucket or white tray with water and the contents agitated. Immediately after agitation, the light fraction was decanted to another container. The light fraction was then decanted into petri dishes and the remaining residue put into a separate container.

The sample containers / petri dishes were marked with the appropriate sample code (relating to the client, date, specific station, sample and replicate no.). All fractions were then decanted into separate 100 mm petri dishes and examined under a stereoscopic microscope. The fauna derived were then split by phyla and placed in glass vials with 70% IMS and stored ready for identification. Each petri dish was then checked for a final time by another member of staff.

Identification was carried out using Olympus SZ40 zoom microscopes with 10X and 20X eyepieces, giving a maximum magnification of up to 80X. An additional 2X objective was occasionally used to increase the potential magnification to 160X. Olympus BX41 compound microscopes were used for further magnification, up to 800X. Identification of infaunal samples was to the lowest possible taxonomic level (i.e. species), and during identification, all individuals were initially separated into families, with part animals being assigned to families where possible. The macrofaunal specimens were identified to species level using standard taxonomic keys, low and high power stereoscopic microscopes and dissection, when necessary, for identification. Incomplete animals without anterior ends were not recorded as individuals to be included in the quantitative dataset. However, they were identified where possible and recorded as present.

The taxonomic literature used was that as detailed in Rees *et al.* (1990) which includes the most recent updates in the scientific literature and newer keys provided by groups such as the NMBAQC and species reporting nomenclature used WoRMS standards (WoRMS editorial board, 2016) and the WoRMS MSBIAS subset (UK Marine Environmental Data and Information Network, 2011).

Measuring of live maerl fragments were undertaken for 30 samples from Arran, Loch Fyne and Wyre Sound and this was undertaken by extracting live maerl fragments from sieve residue on a 5mm sieve and measuring the maximum length of each fragment. Specimens of *Limaria hians* were also measured from samples collected from Loch Fyne with length, width and breadth measured to the nearest mm for each specimen.

The particle size analysis was carried out by a combination of dry sieving and laser particle size analysis (for the fraction <1 mm) using a Malvern Mastersizer 3000 following the latest

NMBAQC guidance (Mason, 2016 v18_01_2016). Prior to analysis, photographs were taken of all samples. The sediment samples were then split with one sub-sample being passed through a 1mm sieve to remove the larger size classes of sediment if required and the <1 mm fraction of the sub-sample analysed using the Malvern Mastersizer 3000. If the PSA sample contained any material above 1mm the remainder of the PSA sample was wet sieved through a 1mm sieve. Each fraction, including the <1 mm fraction was then oven dried at 100°C for 12 hours and weighed with the >1mm fraction passed through a nest of sieves at 0.5 phi intervals. Coarse and fine fractions were combined following NMBAQC guidelines and the data derived from PSA were then used to derive statistics including mean grain size, bulk sediment classes (% silt, sand & gravel), skewness and sorting coefficient using the program Gradistat. These methods are consistent with the procedures identified at the recent NMBAQC PSA workshop on laboratory methods, which was held at the Cefas Lowestoft laboratory in 2014.

2.4 Analysis of Biological Data

Univariate Analysis

A number of primary and derived biological parameter values were calculated from the species data which were subsequently tabulated and input into GIS. A variety of standard biological parameters are routinely utilised for benthic analysis which summarise the species richness and diversity of the benthic communities and may subsequently be used for management purposes to monitor temporal/spatial trends and allow further statistical testing. The following biological parameters have been used in the current study as these are widely reported in the industry and therefore allow comparison with other surveys and were also used for a number of recent SNH surveys in the Clyde Sea area (Allen, 2013, 2014).

- The total number of species at each station (S)
- The total abundance of individuals at each station (A)
- Margalef's index of species richness (d)
- Shannon's diversity index (H') - This index is a univariate measure of diversity which incorporates both the number of species and the distribution or equitability of individuals between species. High values of H' indicate a more diverse community whilst low values indicate low diversity.
- Pielou's evenness (J) - This index is a univariate measure of evenness or equitability which describes the distribution of individuals between species. High values of J (approaching 1) indicate that the abundance of animals are evenly spread between species whilst low values of J (approaching 0) indicate that the majority of animals comprised a few species, a situation which often occurs in low diversity areas subject to disturbance or organic enrichment.

Multivariate Analysis

Multivariate analysis of the abundance data was carried out in order to describe the main patterns and assemblages within the area following standard methodologies (Clarke and Warwick, 2001; Clarke and Gorley, 2006). The samples were analysed for each area (Arran, Loch Fyne and Orkney) to simplify interpretation of biotopes within each MPA and given that habitat types and communities were quite distinct. The differing sampling techniques and sample sizes utilised for the dive core surveys (Loch Fyne and Orkney) in contrast to the grab sampling surveys also required that these samples were analysed separately. Classification (cluster analysis) of the data was undertaken using the Bray-Curtis similarity coefficient and grouped average (UPGMA) clustering technique followed by a non-metric MDS (multi-dimensional scaling) ordination both using the PRIMER package. Cluster analysis is used to display graphically the similarity between stations based upon their

species composition whereby the similarity between stations is calculated (in this case using the Bray-Curtis similarity coefficient) to produce a similarity matrix showing the percent similarity of stations (0% indicating no species in common and 100% indicating an identical community).

These values are then used to plot a dendrogram or tree diagram in which stations are linked at their respective similarity to other stations and consequently it is possible to define groups of stations with similar species composition at a predefined level of similarity. This information along with available environmental data can subsequently be used to assist in the assignment of biotopes.

Non-metric MDS graphically displays the (rank) similarity between stations as a 2 dimensional plot in which the distances between stations indicates the level of similarity between them. The station groupings derived from cluster analysis were subsequently superimposed onto the MDS plots and input into GIS, with the dominant species and mean environmental and biological parameters calculated for each group. Station groupings were derived using the similarity profile test (SIMPROF) within the PRIMER package.

Characteristic taxa within each group were assessed using calculations of mean abundance and the percentage of stations at which the species occurred, and by using the SIMPER routine within PRIMER. The most characteristic taxa for each cluster group derived from SIMPER analysis have been presented along with available environmental data in tabular form to provide a summary of the biological and environmental characteristics of each group of stations which can then be used to assist in the derivation of biotopes.

Correlations between species data and sediment parameters were undertaken using the BEST routine within PRIMER which derives a non-parametric Spearman correlation between the similarity matrices derived from the biological and environmental data. The results of this procedure give the statistic r which gives an indication of the strength of the relationships between the environmental parameters and community structure with higher values (approaching 1) indicating a strong positive correlation. This technique also derives a subset of the best combination of environmental parameters which give the highest correlation in similarity.

3. RESULTS - ARRAN & LOCH FYNE GRAB SAMPLING

3.1 Sedimentary parameters (South Arran and Loch Fyne)

The results of particle size analysis are provided in Annex 2 with a summary of key parameters provided in Annex 3. The spatial distribution of sediment types is illustrated in Figures 6 and 7 which highlight bulk sediment classes (% sand, gravel and mud) for the Arran and Loch Fyne sampling stations respectively.

At South Arran sediments are predominantly gravelly or slightly gravelly sandy muds/muddy sands with a few sites characterised by cleaner gravelly sands, sandy gravel or gravel. In Loch Fyne sediments were either gravelly muddy sands or (slightly gravelly) sandy mud. Quantities of gravel at the survey stations were highly variable and ranged from < 1% (predominantly at the T1 stations in South Arran and the SG stations in Loch Fyne) to 89% at station D5G3. Gravel content tended to be highest at inshore sites to the north at South Arran (stations D3) or inshore around Holy Isle. Mud content was also highly variable at South Arran with values ranging from 1.62% (station D5G3) to 83.8% (station T1G4) with relatively few stations having less than 10% mud (D5G3, D5G4, D1G7, D3G4, D5G1 and D3G9). In Loch Fyne sediments tended to be muddier with mud contents ranging from 9.11% at station FG09 to 68.14% at station SG02. This variability was reflected in the values of sediment sorting coefficients with all samples poorly or very poorly sorted.

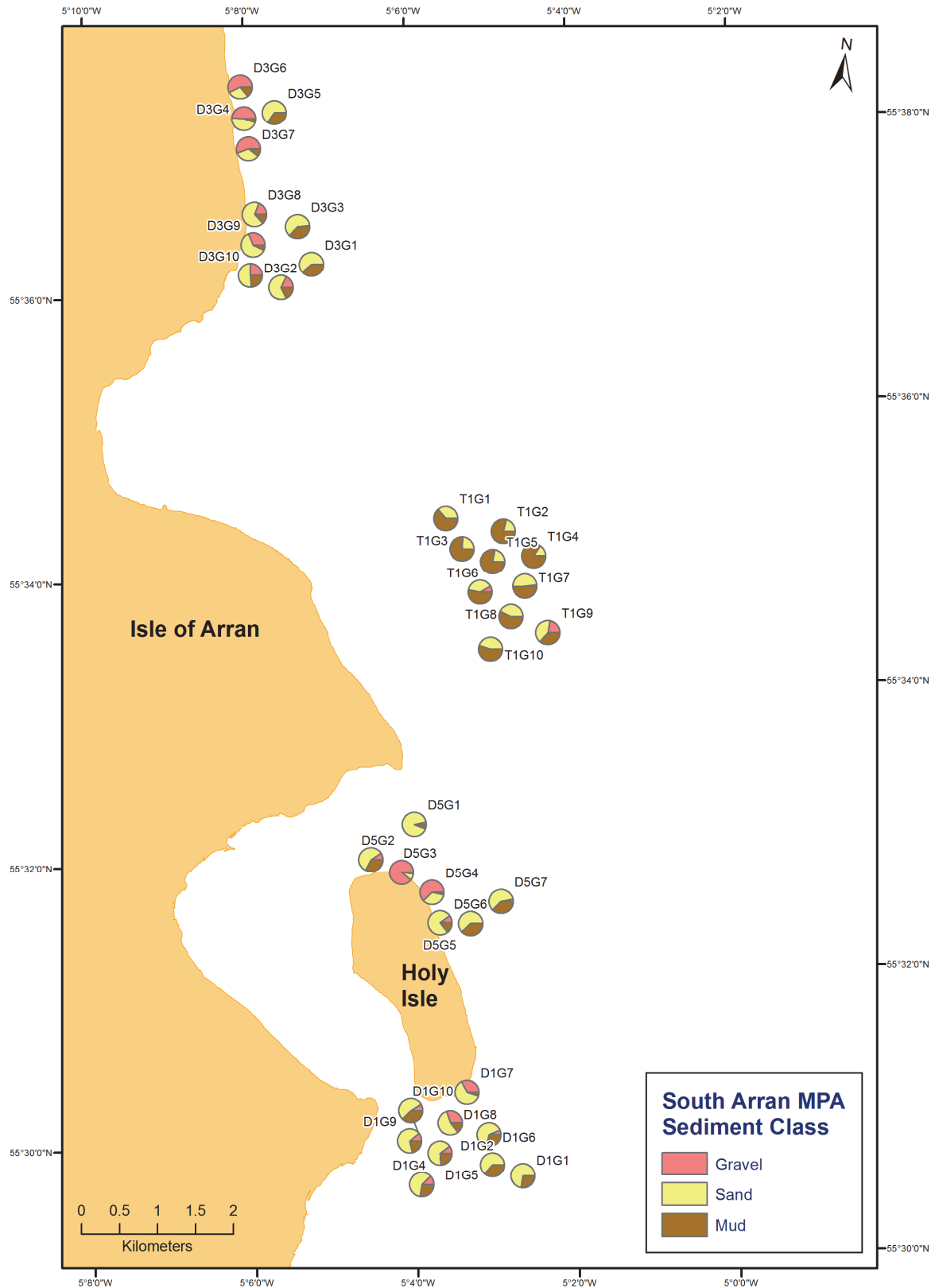


Figure 6. Sediment composition of infaunal samples collected around the Isle of Arran. Station points offset to allow clear display of data. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2016. All rights reserved. Ordnance Survey Licence number 100017908.

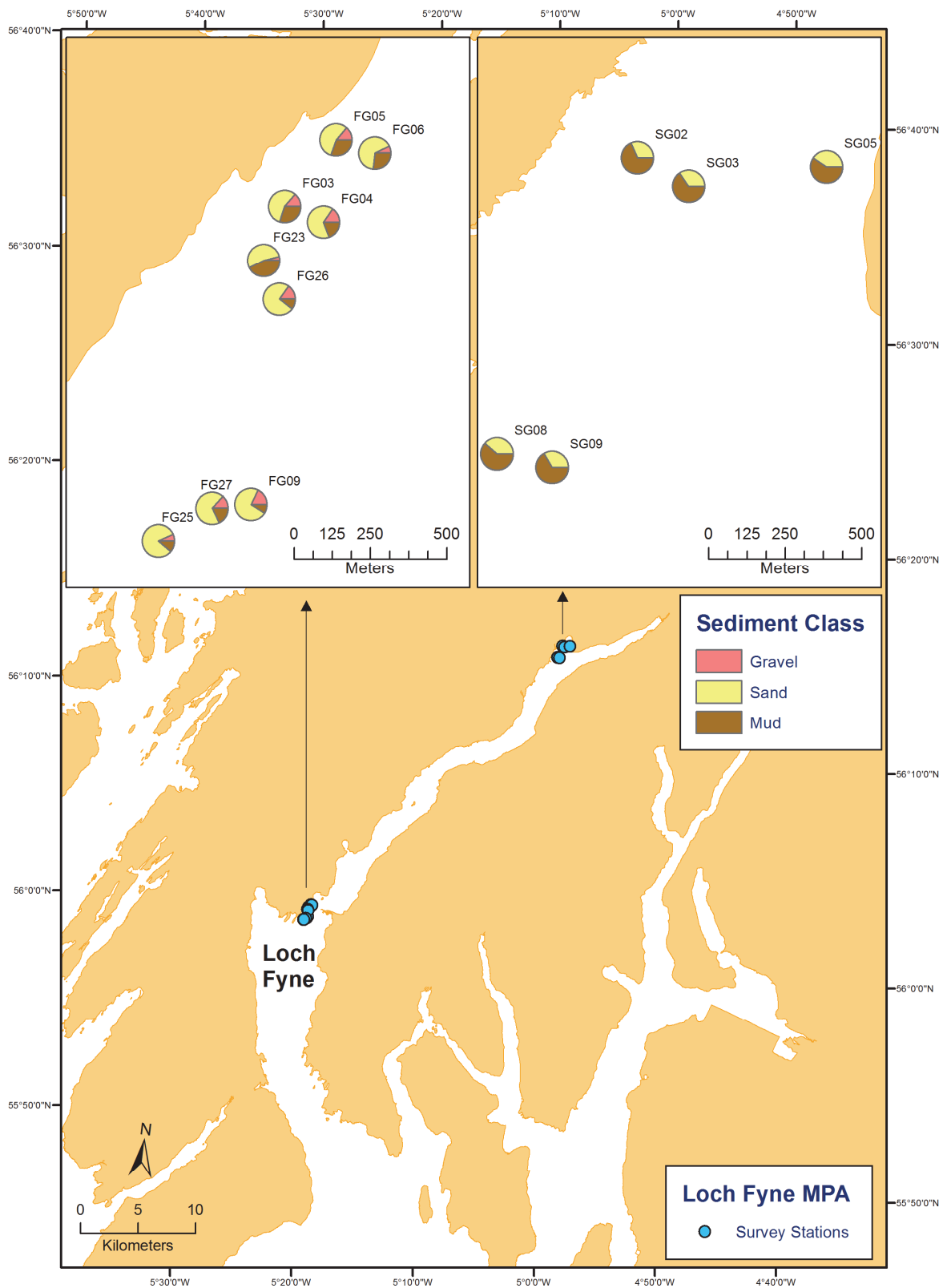


Figure 7. Sediment composition of infaunal samples collected around at Upper Loch Fyne and Goil MPA. Station points offset to allow clear display of data. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2016. All rights reserved. Ordnance Survey Licence number 100017908.

3.2 Primary and derived biological parameters

The samples collected from South Arran during the survey varied considerably in terms of species richness, densities, diversity and evenness and these parameters have been summarised in Table 3 with the spatial distribution of the number of species, abundance and Shannon's diversity provided in Figures 8 to 10. Overall the Arran survey stations were considered to exhibit moderate to very high levels of diversity whilst the densities (abundances) of infaunal organisms were moderate to low (Table 3). The numbers of species recorded per sample station ranged from 11 taxa per 0.1 m² at T1G3 and T1G4 to 101 taxa per 0.1 m² at D5G4, and aside from the T1 stations the majority of samples had over 50 taxa per 0.1m². Figures 8 and 9 highlight lower numbers at the offshore T1 stations whilst higher numbers tend to occur at the most inshore stations.

The abundances of invertebrates ranged from low to moderately high with numbers ranging from 18 individuals at station T1G4 up to 778 individuals per 0.1 m² at station D3G9. The majority of stations had between 150 to 400 individuals per 0.1 m² with lower densities recorded at the offshore T1 stations of which the majority had fewer than 100 individuals. Densities at the other stations were more variable but with slightly higher numbers closer inshore. Diversity indices were also quite variable but generally showed moderate to high levels of diversity and evenness. With the exception of stations D1G10 and D5G6 the inshore stations all had H' values above four with many exhibiting high values above 5. The offshore stations (T1 samples) tended to have somewhat lower values of Shannon's H' ranging from 2.58 to 4.06. All stations with the exception of D1G10, D5G6 and T1G1 and exhibited evenness values above 0.7 with most showing values above 0.8. As described for numbers of taxa and abundance lower diversity metrics were generally recorded at the offshore stations.

Table 3. Primary and derived biological parameters at South Arran.

Station	Number of Species per 0.1m ²	Total Abundance (A) per 0.1m ²	Margalef's d	Pielou's Evenness J	Shannon's Diversity H'
D1G1	38	70	8.71	0.94	4.91
D1G2	49	242	8.74	0.81	4.55
D1G4	75	309	12.56	0.82	5.10
D1G5	74	257	12.98	0.89	5.52
D1G6	60	241	10.76	0.87	5.12
D1G7	65	467	9.92	0.86	5.13
D1G8	53	180	9.63	0.86	4.88
D1G9	42	188	7.83	0.85	4.59
D1G10	53	385	8.40	0.69	3.89
D3G1	44	159	8.48	0.79	4.33
D3G2	77	289	13.24	0.86	5.40
D3G3	34	107	7.06	0.88	4.46
D3G4	82	346	13.00	0.86	5.42
D3G5	47	228	8.47	0.82	4.54
D3G6	61	251	10.13	0.89	5.21
D3G7	66	435	9.88	0.85	5.02
D3G8	77	428	12.05	0.81	5.03
D3G9	82	778	11.42	0.72	4.49
D3G10	82	334	12.73	0.87	5.44
D5G1	72	283	12.58	0.81	5.01
D5G2	88	292	14.62	0.86	5.48
D5G3	93	757	13.27	0.85	5.50
D5G4	101	626	14.60	0.82	5.40

Station	Number of Species per 0.1m ²	Total Abundance (A) per 0.1m ²	Margalef's d	Pielou's Evenness J	Shannon's Diversity H'
D5G5	80	269	13.41	0.86	5.40
D5G6	39	195	7.21	0.65	3.46
D5G7	55	196	9.85	0.90	5.17
T1G1	18	143	3.43	0.66	2.73
T1G2	17	37	4.43	0.92	3.76
T1G3	11	23	2.87	0.78	2.58
T1G4	11	18	3.46	0.94	3.24
T1G5	13	45	3.15	0.83	3.05
T1G6	23	88	4.91	0.76	3.43
T1G7	20	72	4.44	0.81	3.50
T1G8	47	222	8.51	0.73	4.06
T1G9	27	118	5.45	0.78	3.72
T1G10	19	61	4.38	0.86	3.64

The primary and derived biological parameters recorded at Loch Fyne (Table 4 and Figures 11 to 13) highlight the presence of a varied and often diverse range of benthic communities with the numbers of taxa per 0.1m² ranging from 13 (SG02 and SG09) to 103 (FG27). Lowest numbers of species were recorded in the muddier upper Fyne samples (SG02 to SG09) whilst samples in the lower loch were generally characterised by high numbers of taxa with most stations having in excess of 50 taxa. A similar pattern was evident with regards to the numbers of animals recorded (abundance) which were relatively low (<70 per 0.1m²) in the upper loch and moderate to high in the lower loch with abundances ranging from 33 (SG09) to 1318 (FG27) individuals per 0.1m². Diversity and evenness metrics also highlighted higher levels of diversity in the lower loch compared with the upper reaches with values of Shannon's H' diversity for example ranging from 2.3 to 3.08 at stations SG02 to SG09 in upper Loch Fyne whilst the remaining stations in the lower loch all had values of H' greater than 4 with some stations having particularly high H' values above 5 (FG27 and FG23). Pielou's evenness (J) ranged from moderate to high with values ranging 0.6 (SG05) to 0.86 (FG25 and FG26).

Table 4. Primary and derived biological parameters at Loch Fyne.

Station	Number of Species per 0.1m ²	Total Abundance (A) per 0.1m ²	Margalef's d	Pielou's Evenness J	Shannon's Diversity H'
FG-03	66	337	10.48	0.83	4.94
FG-04	41	128	7.83	0.85	4.47
FG-05	64	346	10.26	0.81	4.82
FG-06	67	238	11.88	0.79	4.77
FG-09	53	233	9.36	0.83	4.73
FG-10	41	713	5.78	0.77	4.08
FG-23	86	357	13.95	0.84	5.33
FG-24	35	375	5.74	0.79	4.05
FG-25	52	195	9.48	0.86	4.88
FG-26	38	149	7.39	0.86	4.50
FG-27	103	1318	13.50	0.80	5.30
FG-28	58	497	8.70	0.80	4.60
SG-02	13	64	2.89	0.73	2.69
SG-03	14	37	3.60	0.78	2.95
SG-05	14	54	3.26	0.60	2.30
SG-08	16	60	3.66	0.77	3.08
SG-09	13	33	3.43	0.83	3.06

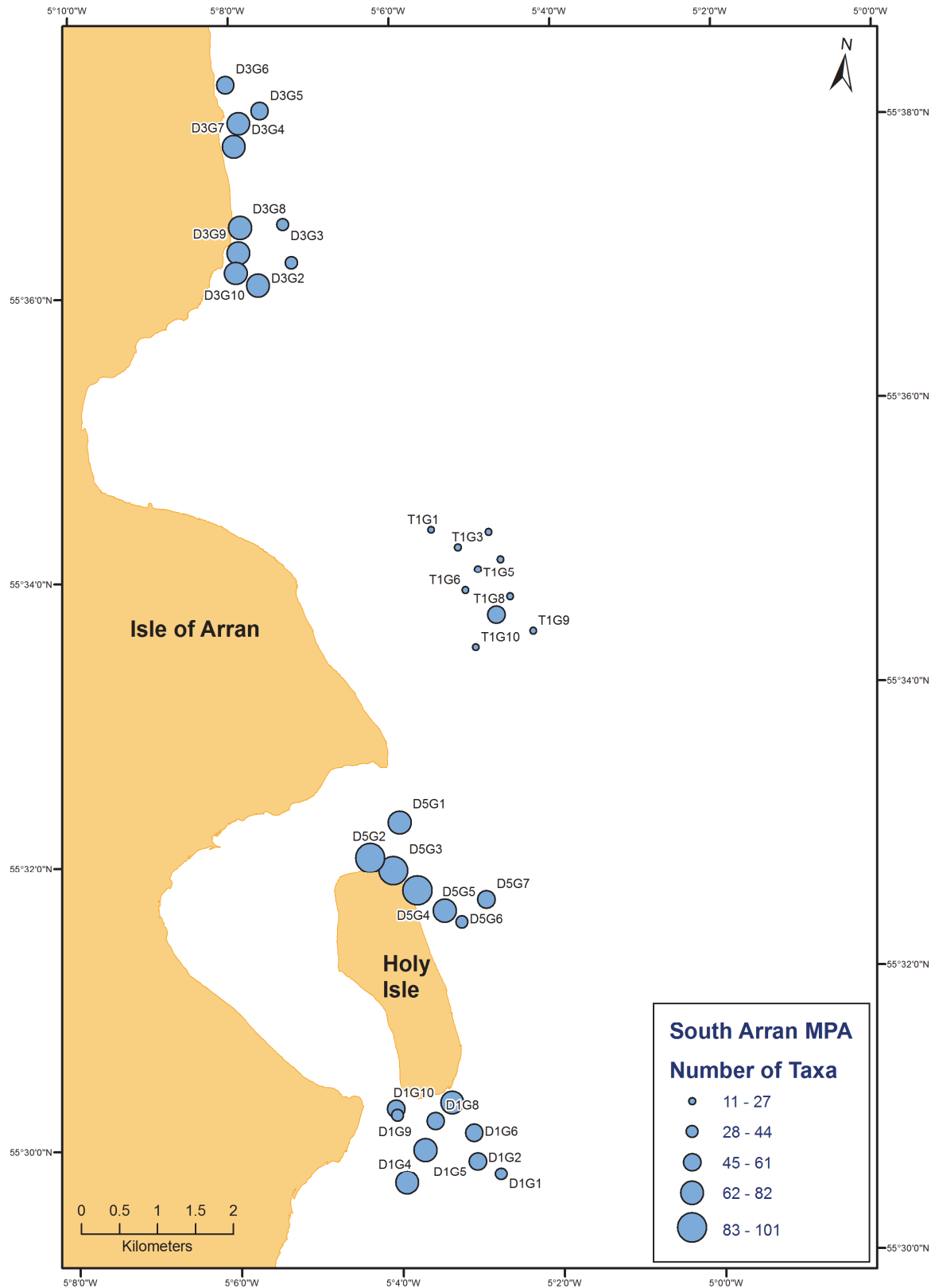


Figure 8. Total numbers of taxa (including qualitative species) collected at the South Arran survey stations. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2016. All rights reserved. Ordnance Survey Licence number 100017908.

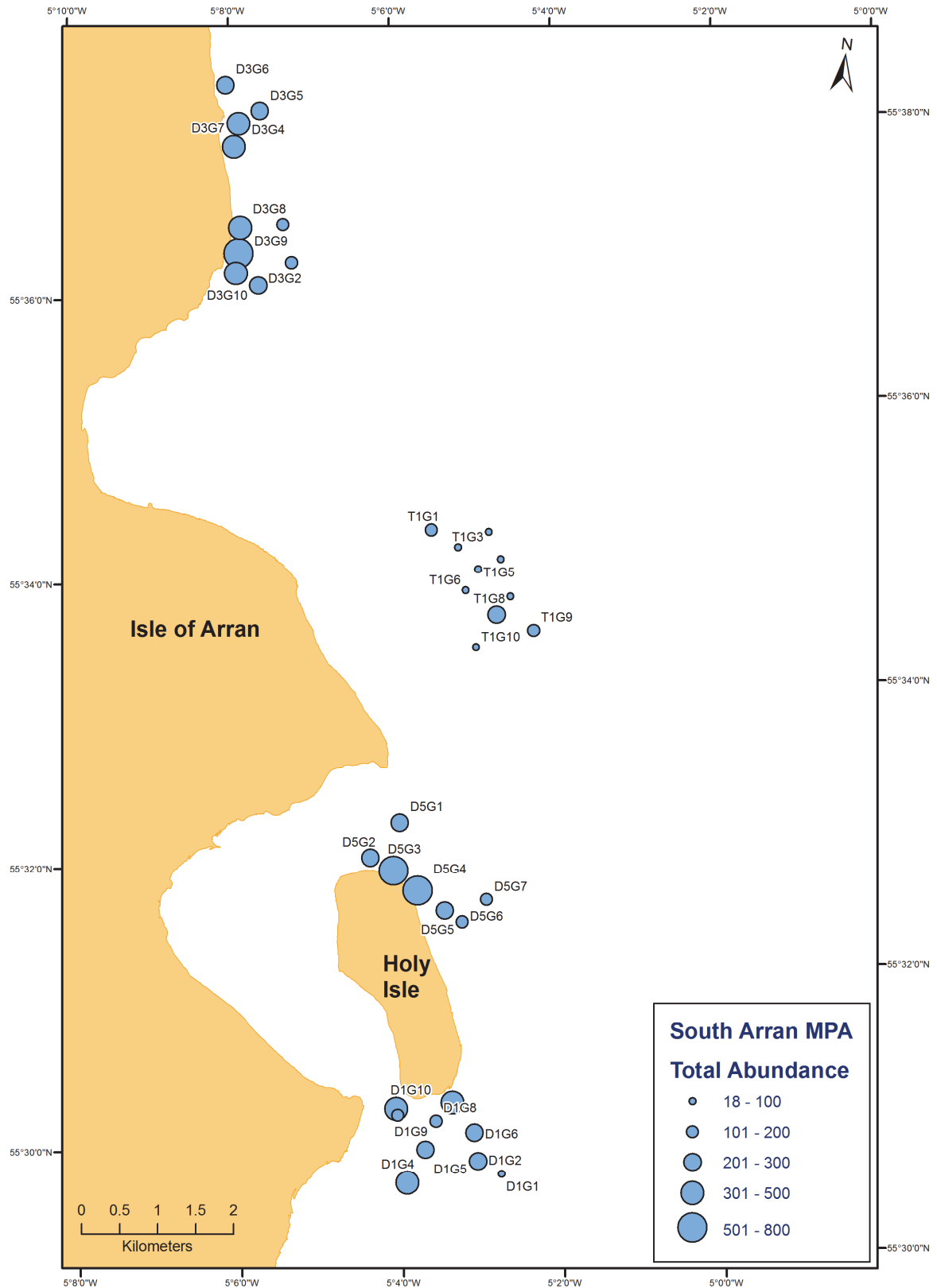


Figure 9. Total abundance (numbers of individuals) within infauna samples collected at the South Arran survey stations. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2016. All rights reserved. Ordnance Survey Licence number 100017908.

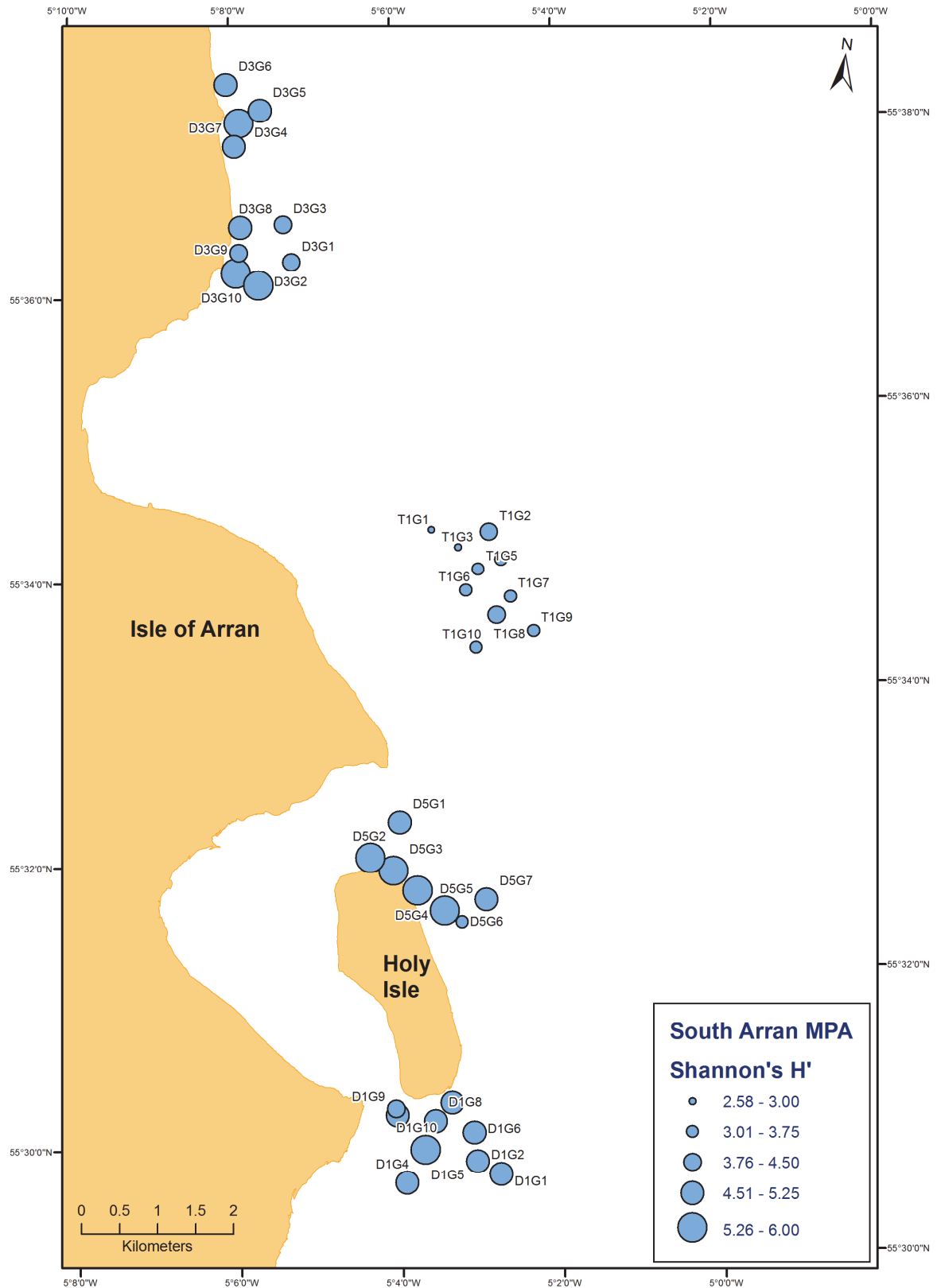


Figure 10. Shannon's diversity (H') of the infauna sample collected at the South Arran survey stations. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2016. All rights reserved. Ordnance Survey Licence number 100017908.

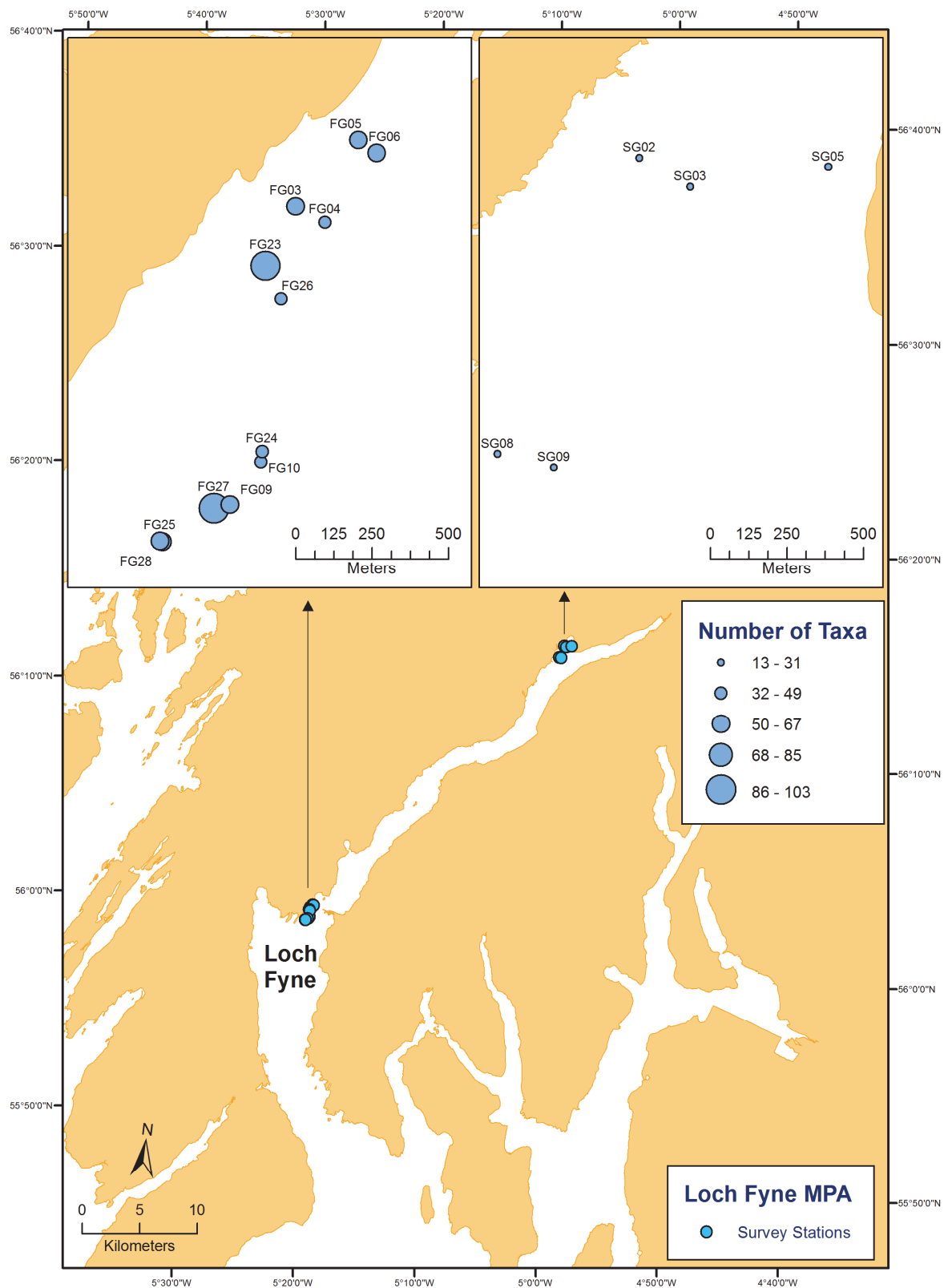


Figure 11. Total numbers of taxa (including qualitative species) collected at the Loch Fyne survey stations. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2016. All rights reserved. Ordnance Survey Licence number 100017908.

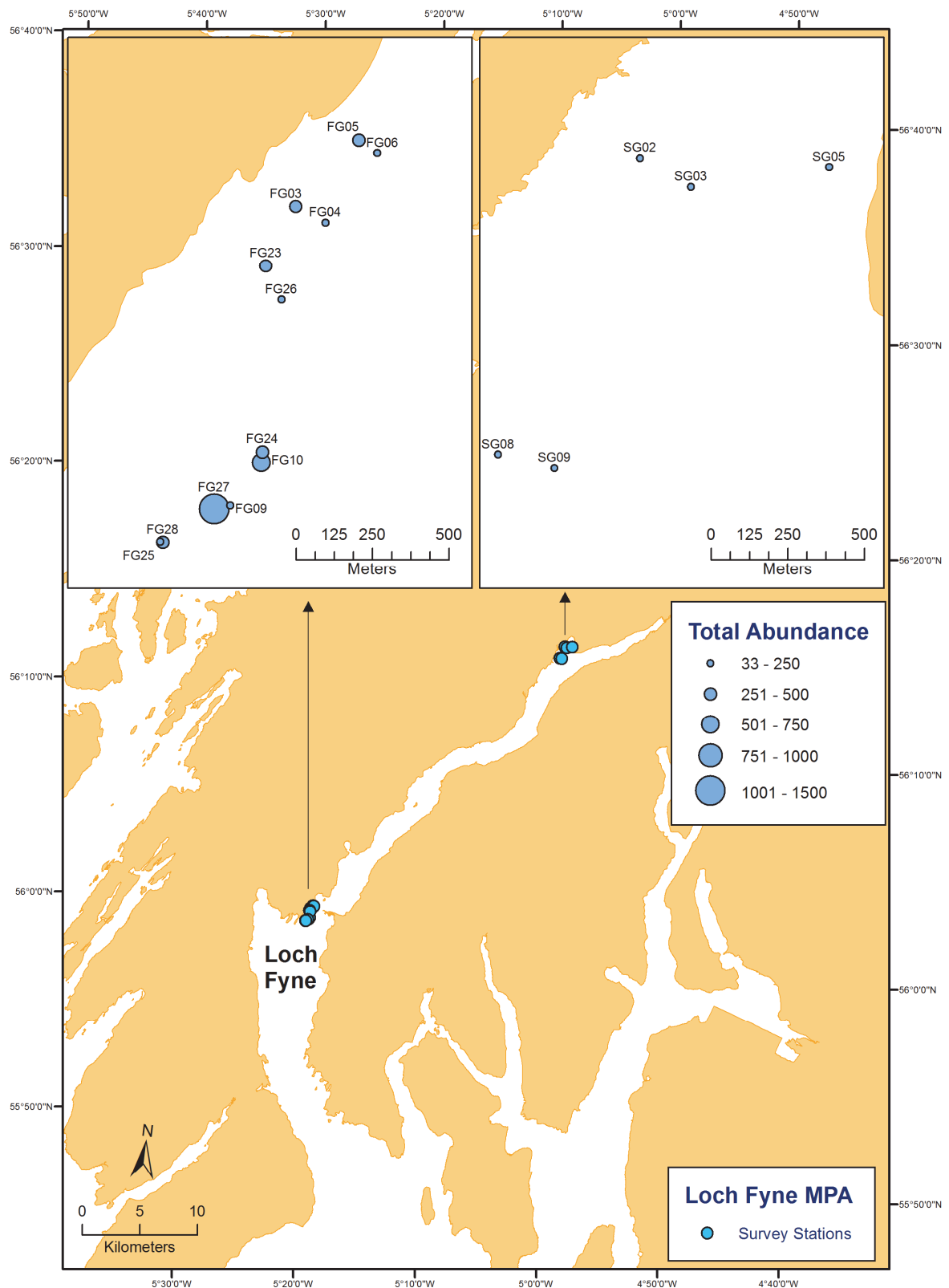


Figure 12. Total abundance (numbers of individuals) within infauna samples collected at the Loch Fyne survey stations. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2016. All rights reserved. Ordnance Survey Licence number 100017908.

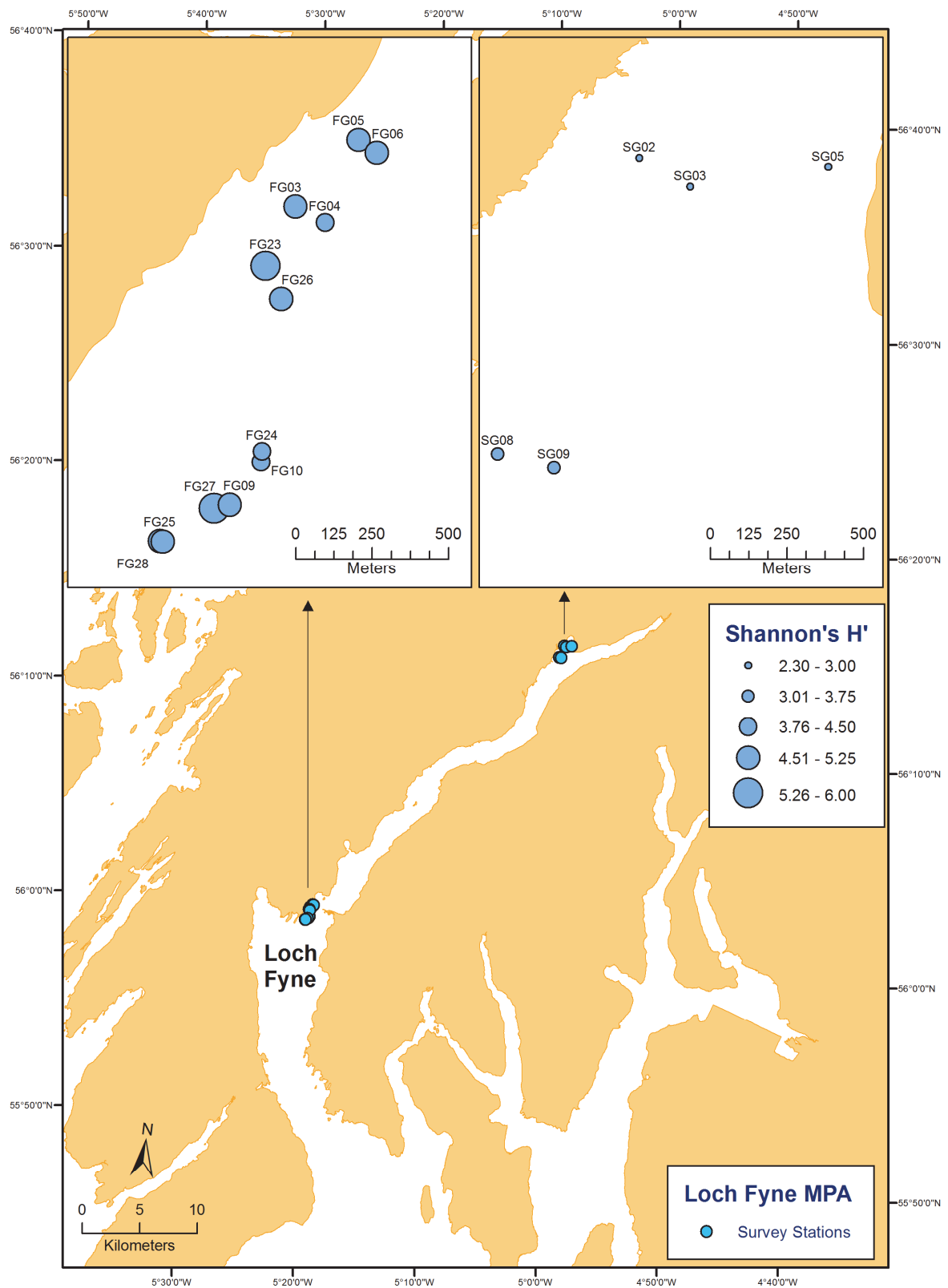


Figure 13. Shannon's diversity (H') of the infauna sample collected at the Loch Fyne survey stations. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2016. All rights reserved. Ordnance Survey Licence number 100017908.

3.3 Species composition

In total 438 taxa were recorded from the 36 Arran samples collected and whilst many of these were present in low abundances or at relatively few stations it highlights the relatively high diversity and variability of the South Arran survey area with regard to infaunal communities. A list of taxa ranked by abundance (taxa which account for 50% of total abundance) is provided in Table 5 and the full species dataset is provided in Annex 4. In terms of abundance, nematode worms along with *Abra alba*, *Owenia fusiformis*, juvenile Amphiuroidae spp., *Gouldia minima*, *Galathowenia oculata* and *Mediomastus fragilis* were most abundant and together accounted for just under over 23% of the animals collected. These species were present in 36% to 61% of the samples. Other taxa with moderate abundances included *Verruca stroemia*, *Lumbrineris* agg., *Leptochiton asellus*, *Aonides paucibranchiata*, *Spirobranchus triqueter*, *Dosinia exoleta*, *Balanus crenatus*, Nemertea spp., *Echinocyamus pusillus*, *Scalibregma inflatum*, *Amphiura filiformis*, *Ennucula tenuis*, *Leptochiton cancellatus*, *Nucula nucleus*, *Glycera lapidum* agg., *Edwardsia claparedii*, *Abra nitida*, *Spiophanes kroyeri*, *Pholoe baltica* and *Thracia villosiuscula* which together with the previously mentioned species accounted for 50% of the total abundance.

Table 5. Dominant taxa (by abundance) recorded at the South Arran survey stations.

Taxa (Sth Arran)	Total Abundance	Mean Abundance	Cumulative% of Total Abundance	No. of Samples	% of Samples
Nematoda spp.	497	13.81	5.44	13	36
<i>Abra alba</i>	377	10.47	9.56	22	61
<i>Owenia fusiformis</i>	281	7.81	12.64	20	56
Amphiuridae spp. (juvenile)	264	7.33	15.53	18	50
<i>Gouldia minima</i>	259	7.19	18.36	16	44
<i>Galathowenia oculata</i>	225	6.25	20.82	17	47
<i>Mediomastus fragilis</i>	201	5.58	23.02	20	56
<i>Verruca stroemia</i>	182	5.06	25.01	4	11
<i>Lumbrineris</i> agg.	179	4.97	26.97	24	67
<i>Leptochiton asellus</i>	167	4.64	28.80	13	36
<i>Aonides paucibranchiata</i>	165	4.58	30.61	9	25
<i>Spirobranchus triqueter</i>	160	4.44	32.36	13	36
<i>Dosinia exoleta</i>	153	4.25	34.03	18	50
<i>Balanus crenatus</i>	146	4.06	35.63	7	19
Nemertea spp.	132	3.67	37.07	26	72
<i>Echinocyamus pusillus</i>	131	3.64	38.51	17	47
<i>Scalibregma inflatum</i>	130	3.61	39.93	24	67
<i>Amphiura filiformis</i>	129	3.58	41.34	14	39
<i>Ennucula tenuis</i>	115	3.19	42.60	9	25
<i>Leptochiton cancellatus</i>	113	3.14	43.83	11	31
<i>Nucula nucleus</i>	106	2.94	44.99	13	36
<i>Glycera lapidum</i> agg.	103	2.86	46.12	18	50
<i>Edwardsia claparedii</i>	95	2.64	47.16	14	39
<i>Abra nitida</i>	93	2.58	48.18	12	33
<i>Spiophanes kroyeri</i>	87	2.42	49.13	22	61
<i>Pholoe baltica</i>	80	2.22	50.01	16	44
<i>Thracia villosiuscula</i>	79	2.19	50.87	7	19
<i>Kurtiella bidentata</i>	78	2.17	51.72	18	50
<i>Lysianassa plumosa</i>	75	2.08	52.54	9	25
<i>Sosane sulcata</i>	71	1.97	53.32	8	22

A wide range of other polychaete, bivalve, crustacean and echinoderm taxa were also recorded in very low numbers with the majority of taxa recorded at fewer than three stations. Specimens of live maerl were recorded at a number of the shallower stations off Arran albeit in relatively low densities. In the muddier sediments further offshore (stations T1) low

numbers of larger crustacea were recorded at some stations including burrowing megafauna such as *Calocaris macandreae* and *Nephrops norvegicus*. A few examples of the PMF species *Arctica islandica* were also recorded.

The Loch Fyne benthic samples recorded a total of 279 taxa (Annex 5) with a diverse variety of faunal groups predominantly polychaetes, echinoderms (notably ophiuroids) and bivalve molluscs. Five samples included *Limaria hians*, a habitat forming species and a protected feature in the Upper Loch Fyne and Loch Goil NC MPA.

The most dominant taxa recorded within the Loch Fyne grab samples (Table 6) included *Nereimyra punctata*, Nematoda, *Spirobranchus triqueter*, *Ophiothrix fragilis*, *Onoba semicostata*, *Ophiocomina nigra*, *Pholoe inornata*, juvenile *Modiolus modiolus*, *Gouldia minima*, *Sphaerodorium gracilis*, *L. hians*, *Leptochiton asellus* and *Polycirrus* spp. which collectively accounted for 51% of the total abundance. These taxa were often patchily distributed and occurred in 29% to 71% of the samples with the most ubiquitous taxa including *Polycirrus* spp., Nemertea, *S. triqueter* and *S. gracilis* which were recorded in over 70% of the samples. A wide range of other polychaete, bivalve, crustacean and echinoderm taxa were also recorded in very low numbers with the majority of taxa recorded at fewer than 15% of stations. Occasional fragments of live maerl (*Phymatolithon calcareum* or *Lithothamnion* sp.) were recorded at a number of the shallower stations in Loch Fyne albeit in low densities.

Table 6. Dominant taxa (by abundance) recorded at the Loch Fyne survey stations.

Taxa (Fyne)	Total Abundance	Mean Abundance	Cumulative % of Total Abundance	No. of Samples	% of Samples
<i>Nereimyra punctata</i>	397	23.35	7.73	9	53
Nematoda	288	16.94	13.34	8	47
<i>Spirobranchus triqueter</i>	270	15.88	18.60	12	71
<i>Ophiothrix fragilis</i>	254	14.94	23.55	7	41
<i>Onoba semicostata</i>	234	13.76	28.11	6	35
<i>Ophiocomina nigra</i>	229	13.47	32.57	10	59
<i>Pholoe inornata</i>	214	12.59	36.74	8	47
<i>Modiolus modiolus</i> (juv.)	159	9.35	39.83	6	35
<i>Gouldia minima</i>	150	8.82	42.75	11	65
<i>Sphaerodorium gracilis</i>	121	7.12	45.11	12	71
<i>Limaria hians</i>	120	7.06	47.45	5	29
<i>Leptochiton asellus</i>	95	5.59	49.30	12	71
<i>Polycirrus</i> spp.	88	5.18	51.01	13	76
<i>Hiatella arctica</i>	88	5.18	52.73	6	35
<i>Thyasira flexuosa</i>	83	4.88	54.34	7	41
<i>Golfingia vulgaris vulgaris</i>	80	4.71	55.90	4	24
<i>Amphiura chiajei</i>	79	4.65	57.44	5	29
<i>Diplocirrus glaucus</i>	77	4.53	58.94	9	53
<i>Thracia villosiuscula</i>	68	4.00	60.26	11	65
<i>Pseudopolydora pulchra</i>	58	3.41	61.39	1	6
Nemertea	57	3.35	62.50	13	76
<i>Nucula nucleus</i>	54	3.18	63.56	5	29
<i>Pholoe baltica</i>	52	3.06	64.57	8	47
<i>Dosinia lupinus</i>	50	2.94	65.54	6	35
<i>Mediomastus fragilis</i>	49	2.88	66.50	6	35
<i>Lumbrineris</i> agg.	46	2.71	67.39	10	59
<i>Ennucula tenuis</i>	44	2.59	68.25	10	59
<i>Ophiopholis aculeata</i>	43	2.53	69.09	4	24
<i>Glycera lapidum</i> agg.	40	2.35	69.87	8	47
<i>Moerella donacina</i>	40	2.35	70.65	6	35

3.4 Multivariate analysis (Arran)

The results of multivariate analysis on the benthic samples are provided in Figure 14. Similarities between samples range from 10% to just over 60% highlighting a quite varied benthic assemblage which is likely to reflect (in part) the high numbers of taxa occurring in low numbers at few stations. The SIMPROF routine identified 14 groups of samples as highlighted in Figure 14 although these included five groups containing a single sample. The main divisions split the majority of the offshore T1 samples in groups a and b from the remaining samples at around 10% similarity whilst the other main division splits groups c to g from groups h to m at around 20% similarity. The results of the BEST routine (Table 7) highlight the correlation between the environmental parameters and species similarity data. Correlations ranged from 0.114 (sediment kurtosis) to 0.857 (water depth) with mud content and median/mean phi grain size also exhibiting relatively high correlations around 0.7 or above. The remaining parameters exhibited somewhat lower correlations. The best combination of parameters was water depth and median phi grain size which gave a combined correlation of 0.865. These results reflect the correlation between water depth and mud content/median grain size with the deeper sites over 40m water depth (SG stations) having mud contents in excess of 60% whilst shallower inshore stations tended to have a lower mud content. However, there was also considerable differences in mud content at the shallower stations which was not depth dependent. Such trends could be examined further in the future using additional analysis e.g. Permanova.

The characteristic taxa derived from SIMPER which accounted for the bulk of the similarity within sample groups (typically the top 70%) are provided in Annex 6 which also includes the list of samples and a summary of the sediment types and water depth (m CD) to aid in biotope assignments. For groups with just a single station (groups d, e, j, k and l) just the most dominant taxa are shown. Group a includes four stations in the offshore T1 area in deep sandy muds with a very low gravel content. These stations are characterised by taxa such as *Abra alba*, *Mediomastus fragilis*, *Spiophanes kroyeri*, *Chaetoderma nitidulum*, *Scoletoma fragilis*, *Glycera unicornis*, *Nucula nucleus* and *Nephtys incisa*. A number of stations in this group also included burrowing megafauna such as *Nephrops norvegicus* and *Calocaris macandrea*. Group b comprised on the majority of the remaining offshore stations in similar sediments but with a somewhat lower mud content and variable but higher gravel content. These stations were characterised by taxa such as *A. alba*, *S. kroyeri*, *Abra nitida*, *Ennucula tenuis*, *Dasybranchus* spp., *Turritella communis* and *N. incisa* and also occasionally included examples of burrowing megafauna.

Group c comprised samples from D3 stations in shallow water whilst group d was represented by a single station (D1G8). These shallow water stations were typically characterised by mixed muddy sandy gravel or gravelly muddy sand with taxa such as *Scalibregma inflatum*, *Gouldia minima*, *Lysianassa plumosa*, *Vaunthompsonia cristata*, *Leptochiton asellus*, *Echinocyamus pusillus*, *Tectura virginea*, *Nereimyra punctata* and *Spirobranchus triqueter* (group c) or *Mediomastus fragilis*, *Leptochiton cancellatus*, *Lumbrineris* agg., *Aonides paucibranchiata*, *Glycera lapidum* agg., *Scalibregma inflatum* and *Echinocyamus pusillus* (group d).

Group e comprised a very gravelly site (D5G3) which was characterised by Nematoda spp., Amphiuroidae spp. (juvenile), *Gouldia minima*, *Malmgrenia mcintoshi*, *Leptochiton asellus*, *Leptochiton cancellatus*, *Ophiocomina nigra* and *Spirobranchus triqueter*. Group f included stations D3G8 and D3G9 in shallow mixed sediment habitats with sandy gravels with a moderate silt content and taxa including Nematoda spp., *M. fragilis*, *Aonides paucibranchiata*, *Grania* spp., *Glycera lapidum* agg., *S. triqueter* and juvenile Amphiuroidae spp.

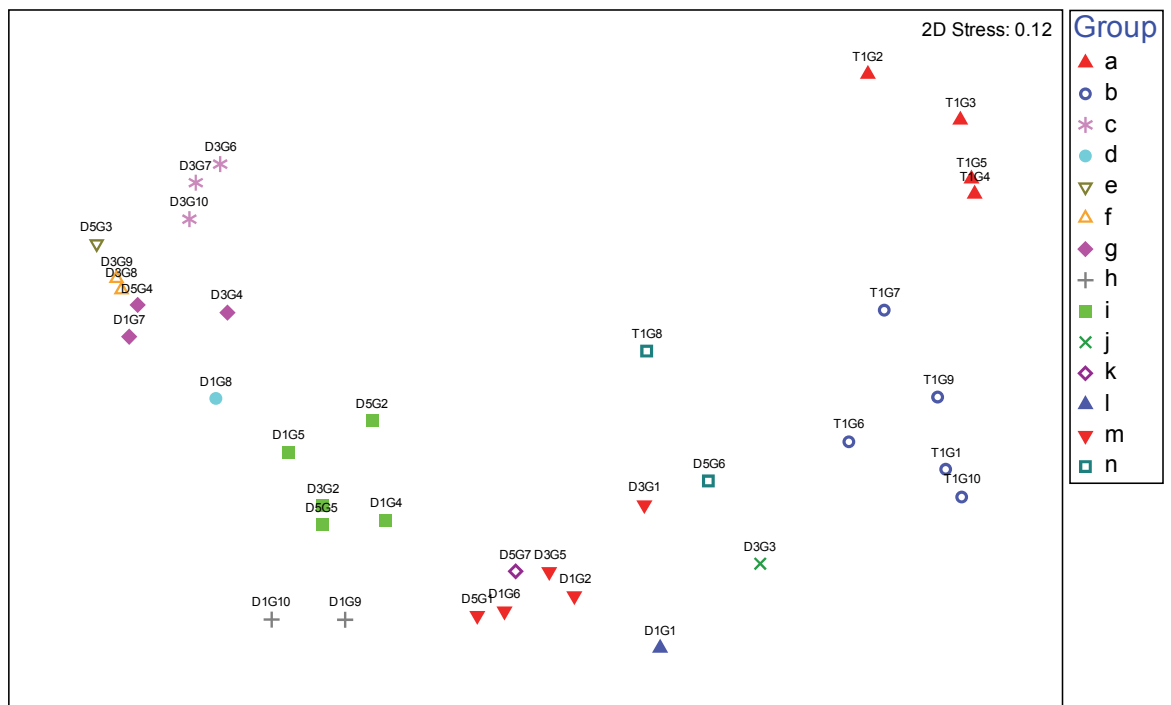
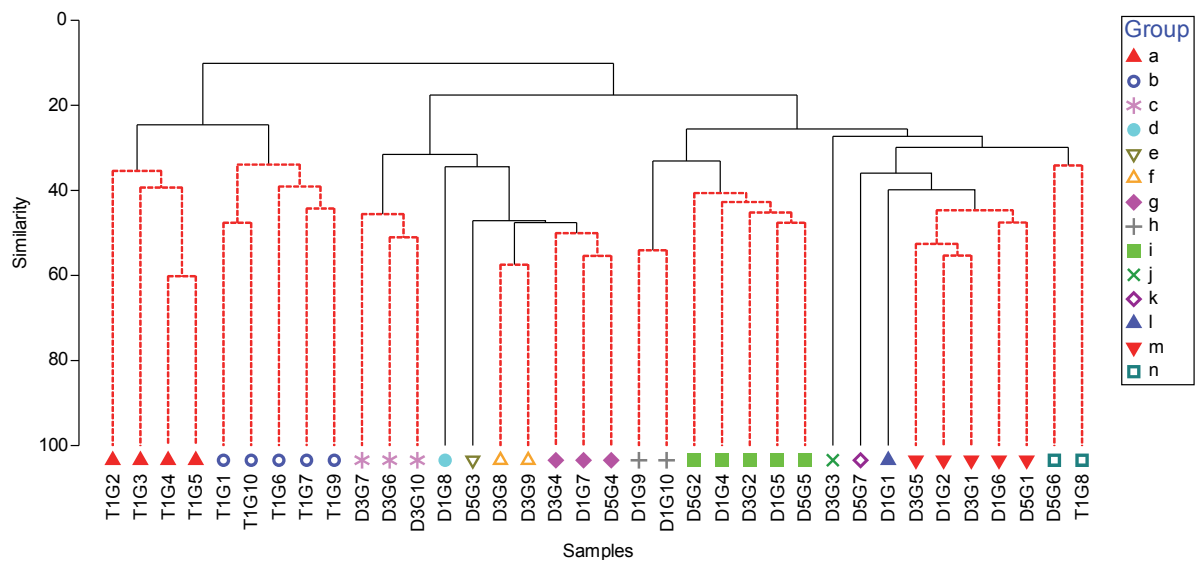


Figure 14. Results of cluster analysis and MDS.

Group g included stations D1G7, D3G4 and D5G4 which were also relatively shallow inshore habitats but with somewhat cleaner sandy gravel or muddy sandy gravel sediments. This group of stations was characterised by taxa including *G. minima*, *Leptochiton asellus*, *Aonides paucibranchiata*, *Dosinia exoleta*, *Leptochiton cancellatus*, *M. fragilis*, *Echinocyamus pusillus*, *Thracia villosiuscula*, *S. triqueter*, *Macrochaeta* spp. and *Clausinella fasciata*. Many of the stations from groups c to g were found in areas with maerl gravel and occasional live fragments of maerl were often recorded at these stations with high numbers of invertebrate taxa.

Groups h and i were clustered together at around 30% similarity and included a number of stations in slightly deeper water in mixed gravelly muddy sand. These were typically characterised by taxa such as *Sosane sulcata*, *Owenia fusiformis*, *Lumbrineris* agg., *Kurtiella*

bidentata, *Polycirrus* spp., *Balanus balanus* and *Goniada maculata* (group h) or *Owenia fusiformis*, *Balanus crenatus*, *Lumbrineris* agg., *Nemertea* spp., *Galathowenia oculata*, *Amphictene auricoma* and *Terebellides stroemii* (group i).

Groups j and k were associated with groups l and m both included a just single station (D3G3 and D5G7 respectively) in deeper slightly gravelly sandy muds. These were characterised by lower numbers of taxa such as *Abra* spp., *Chaetozone setosa*, *A. alba*, *Nucula hanleyi*, *Spiophanes kroyeri*, *Notomastus* spp. and *Amphiura filiformis* (group j) or *Amphiuridae* spp. (juvenile), *G. oculata*, *O. fusiformis*, *Kurtiella bidentata*, *Nemertea* spp., *Amphiura filiformis*, *Spio* spp. and *Spiophanes kroyeri* (group k). Group l also consisted of a single station (D1G1) in slightly gravelly muddy sand characterised by *G. oculata*, *A. alba*, *A. filiformis*, *Polycarpa* spp., *Amphiuridae* spp. (juvenile) and *Timoclea ovata*. Group m included a range of stations in moderately deep circalittoral (slightly gravelly) muddy sands with moderately high mud content and taxa including *Galathowenia oculata*, *A. filiformis*, *O. fusiformis*, *Amphiuridae* spp. (juvenile), *A. alba*, *Edwardsia claparedii*, *Diplocirrus glaucus*, *Nemertea* spp., *Nucula hanleyi*, *Lumbrineris* agg., *Phaxas pellucidus*, *Polycirrus* spp., *Ampelisca tenuicornis*, *Phoronis* spp., *Nephtys hombergii* and *Dosinia exoleta*.

Group n included two stations a circalittoral inshore site in (slightly gravelly) muddy sand (D5G6) and an offshore deeper sandy mud site (T1G8). These stations were characterised by high numbers of *A. alba* along with *Amphictene auricoma*, *Abra nitida*, *Nucula nucleus*, *Nemertea* spp., *G. oculata* and *Spiophanes kroyeri* with the offshore site also including a single *Nephrops norvegicus*.

Table 7. Results of the BEST routine. Parameters with ticks highlight those parameters which in combination produced the highest correlation with species similarity data.

Parameter	Correlation (r)	Best Combination (r=0.865)
Depth	0.857	✓
Median Phi	0.734	✓
Mud	0.708	
Mean Phi	0.697	
Gravel	0.374	
Sand	0.343	
Skewness	0.164	
Sorting	0.127	
Kurtosis	0.114	

3.5 Multivariate analysis (Loch Fyne)

The results of multivariate analysis on the benthic samples are provided in Figure 15. Similarities between samples range from around 5% to just below 70% highlighting a quite varied benthic assemblage which is likely to reflect (in part) the high numbers of taxa recorded in low numbers at relatively few stations and also the variations in habitat type. The SIMPROF routine identified 8 groups of samples as highlighted in Figure 15 although these included four groups containing a single station. The results of SIMPER analysis on the cluster groups derived from SIMPROF which highlights characteristic taxa along with environmental parameters are provided in Annex 7.

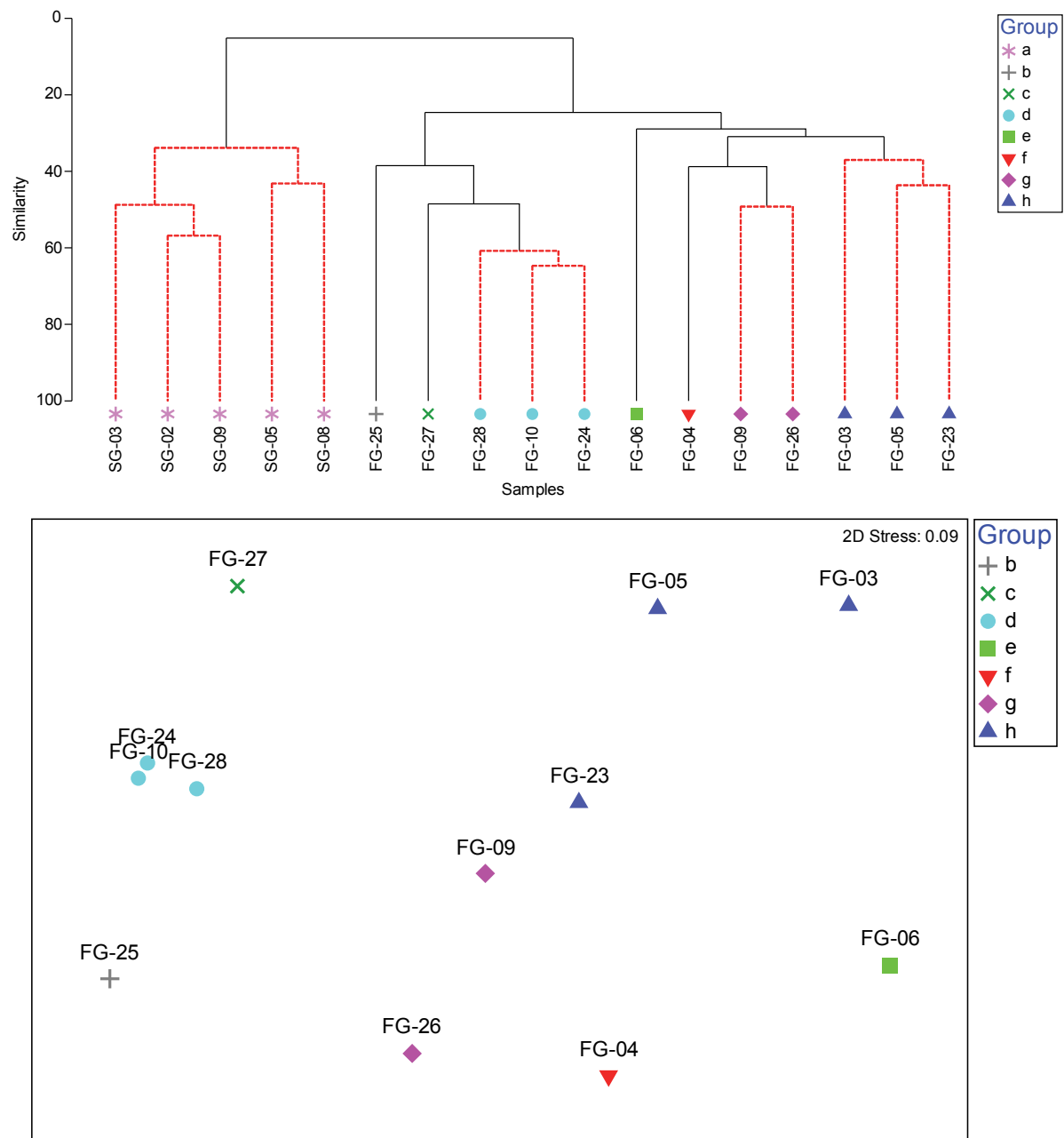


Figure 15. Results of cluster analysis and nMDS (SG stations from group a omitted).

Group a consists of all the SG stations located in deeper water in (slightly gravelly) sandy mud which were separated from the remaining stations at around 5% similarity. These

stations were characterised by *Amphiura chiajei* and *Diplocirrus glaucus* along with a variety of other less frequently recorded taxa with lower densities such as *Cylichna cylindracea*, *Spiophanes kroyeri*, *Chaetozone setosa*, *Ennucula tenuis*, *Scalibregma inflatum* and Nemertea spp. Groups b and c comprised single stations (FG25 and FG27 respectively) in shallow gravely muddy sand characterised by either *Ophiothrix fragilis*, *Nereimyra punctata*, *Ophiopholis aculeata*, *Ophiocomina nigra*, *Harmothoe* spp., *Ensis ensis*, *Onoba semicostata*, *Lumbrineris* agg. and *Mya arenaria* with occasional flame shell (*Limaria hians*) in group b, or *Onoba semicostata*, Nematoda, *Nereimyra punctata*, *Modiolus modiolus*, *Pholoe inornata*, *O. fragilis*, *L. hians*, *Spirobranchus triqueter*, *Sphaerodorum gracilis* and *Ophiocomina nigra* in group c. Both of these stations were loosely associated with stations FG10, FG24 and FG28 in group d which were taken from *Limaria* nest material and along with moderately high numbers of *Limaria* included taxa such as *Nereimyra punctata*, Nematoda, *Pholoe inornata*, *O. fragilis*, *M. modiolus*, *Polycirrus* spp., *Onoba semicostata*, *Sphaerodorum gracilis*, *Hiatella arctica*, *S. triqueter*, *Ennucula tenuis* and *Ophiocomina nigra*.

Groups e and f consisted of single stations FG06 and FG04 which were loosely associated with groups g and h at around 30 to 40% similarity which were all characterised by somewhat mixed sediments (gravely muddy sand) in shallow water. Group e was characterised by taxa such as *Pseudopolydora pulchra* along with *Phaxas pellucidus*, *Mya truncata*, *Thyasira flexuosa*, *Dosinia lupinus*, Nemertea, *Ampelisca tenuicornis*, *Thracia villosiuscula* and *Pholoe inornata* whilst group f was characterised by moderate numbers of the ophiuroid *O. nigra* and the encrusting polychaete *S. triqueter* along with *Lysianassa plumosa*, *Dosinia lupinus*, *Glycera lapidum* agg., *Balanus balanus* and *Moerella donacina*.

Group g (FG09 and FG26) was also characterised by quite high numbers of *O. nigra* along with polychaetes such as *Sphaerodorum gracilis*, *Lumbrineris* agg. and *Mediomastus fragilis* with other taxa including *Leptochiton asellus*, *S. triqueter*, *G. lapidum* agg. and *Gouldia minima* also present. The stations in group h were also characterised by shallow gravely muddy sand and whilst ophiuroids were present in somewhat lower numbers (including a variety of *Ophiothrix* species or *O. nigra*) these stations were also characterised by bivalves such as *G. minima*, *Thyasira flexuosa*, *Moerella donacina* and *Thracia villosiuscula* along with a variety of other taxa such as *Leptochiton asellus*, *S. triqueter*, *Lysianassa plumosa* and *Photis longicaudata*.

The results of the BEST routine (Table 8) indicated that sedimentary parameters and water depth were well correlated to patterns in species similarity with most parameters exhibiting correlations above 0.5 with sand content, mud content and depth all having correlations above 0.7. Sediment skewness and kurtosis had rather low correlations (<0.2) and the best combination of parameters were sand content, water depth, median phi grain size and sediment sorting with a correlation of 0.856.

Table 8. Results of the BEST routine on the Loch Fyne data. Parameters with ticks highlight those parameters which in combination produced the highest correlation with species similarity data.

Parameter	Correlation (r)	Best Combination (r=0.856)
Sand	0.785	✓
Mud	0.779	
Depth	0.725	✓
Mean Phi	0.673	
Gravel	0.606	
Median Phi	0.606	✓
Sorting	0.516	✓
Skewness	0.16	
Kurtosis	0.128	

3.6 Biotope composition (Arran)

Biotores were assigned to each station on the basis of species composition, sedimentary parameters, water depth and the results of multivariate analysis. A number of the stations exhibited somewhat poorly defined or intermediate infaunal communities notably from coarse or mixed sediment communities which are rather poorly defined by the current version of the UK biotope classification (Connor *et al.*, 2004). A summary of biotope codes for stations in each of the groups derived by cluster analysis with sediment descriptions and characteristic taxa is provided in Table 9. A number of stations had rather uncertain biotope classifications as described below and have been recorded with the appropriate qualifier for entry into Marine Recorder. The spatial distribution of biotores around South Arran is provided in Figure 16.

The stations within groups a and b are typically deep mud or sandy mud habitats with a comparatively impoverished infaunal community (in relation to the inshore stations) which resembles that recorded in burrowed mud communities and occasional megafauna were recorded in the grabs at some stations in these groups. Whilst these have been assigned **SS.SMu.CFiMu** (Circalittoral fine mud) this area are likely to include examples of **SS.SMu.CFiMu.MegMax** (Burrowing megafauna and *Maxmuelleria lankesteri* in circalittoral mud) or possibly **SS.SMu.CFiMu.SpriMeg** (Seapens and burrowing megafauna in circalittoral fine mud). Characterisation of such biotores from grab samples is problematic given that they typically under sample larger taxa and video footage would be required to be certain of any finer resolution biotope assignment.

Groups c to g include the samples from shallow inshore mixed muddy sandy gravels around Arran. These groups included muddier and cleaner variants of shallow infralittoral mixed or coarse sediment biotores with the coarser fraction often comprising maerl gravel and live specimens of maerl were also recorded in low densities. The maerl fragments recorded in the grab sample residues were not present in sufficient densities to be classified as a maerl biotope. However, video data would be required to confirm the presence of maerl biotores in the general vicinity of these stations. Such habitats were often extremely diverse and supported a range of taxa including robust venerid bivalves and a range of other bivalves such as *Moerella* spp. (albeit in low numbers). Whilst these biotores are somewhat poorly defined and currently classified as **SS.SCS.ICs** (Infralittoral coarse sediment) and **SS.SMx.IMx** (Infralittoral mixed sediment) these stations show some resemblance to coarse gravel or sand biotores such as **SS.SCS.CCS.MedLumVen** (*Mediomastus fragilis*, *Lumbrineris* spp. and venerid bivalves in circalittoral coarse sand or gravel) (Connor *et al.*,

2004) and **SS.SCS.ICS.MoeVen** (*Moerella* spp. with venerid bivalves in infralittoral gravelly sand). It is possible that such habitats are shallow, slightly silty, maerl influenced variants of these biotopes.

Groups h and i include moderately deep circalittoral mixed sediments (typically gravelly muddy sands) which are quite diverse but poorly defined in terms of the biotope classification and have subsequently been assigned **SS.SMx.CMx** (Circalittoral mixed sediment). Groups j, k, l and m are closely associated in the cluster analysis and include stations characterised by circalittoral muddy sands with quite high mud content usually with moderate numbers of *Abra* spp., brittlestars such as *Amphiura filiformis* and Oweniidae polychaetes along with a wide range other bivalves and polychaetes. These have tentatively been assigned the biotope **SS.SMu.CSaMu.AfilMysAnit** (*Amphiura filiformis*, *Mysella bidentata* and *Abra nitida* in circalittoral sandy mud) although this classification is rather uncertain as species composition is quite variable and these communities also resemble other circalittoral muddy sand/sandy mud biotopes such as **SS.SMu.CSaMu.AfilNten** (*Amphiura filiformis* and *Nuculoma tenuis* in circalittoral and offshore sandy mud) or **SS.SMu.CSaMu.ThyNten** (*Thyasira* spp. and *Nuculoma tenuis* in circalittoral sandy mud). This group also shows some similarity to offshore biotopes such as **SS.SSa.OSa.OfusAfil** (*Owenia fusiformis* and *Amphiura filiformis* in offshore circalittoral sand or muddy sand) so perhaps represent an intermediate variant. The two stations in group n are rather poorly defined circalittoral muddy sand or sandy mud habitats classified as **SS.SMu.CSaMu** and **SS.SMu.CFiMu** although the latter (station T1G8) in deeper water included a specimen of *Nephrops norvegicus* so as described for groups a and b could include burrowing megafauna biotopes such as **SS.SMu.CFiMu.MegMax** or **SS.SMu.CFiMu.SpnMeg**.

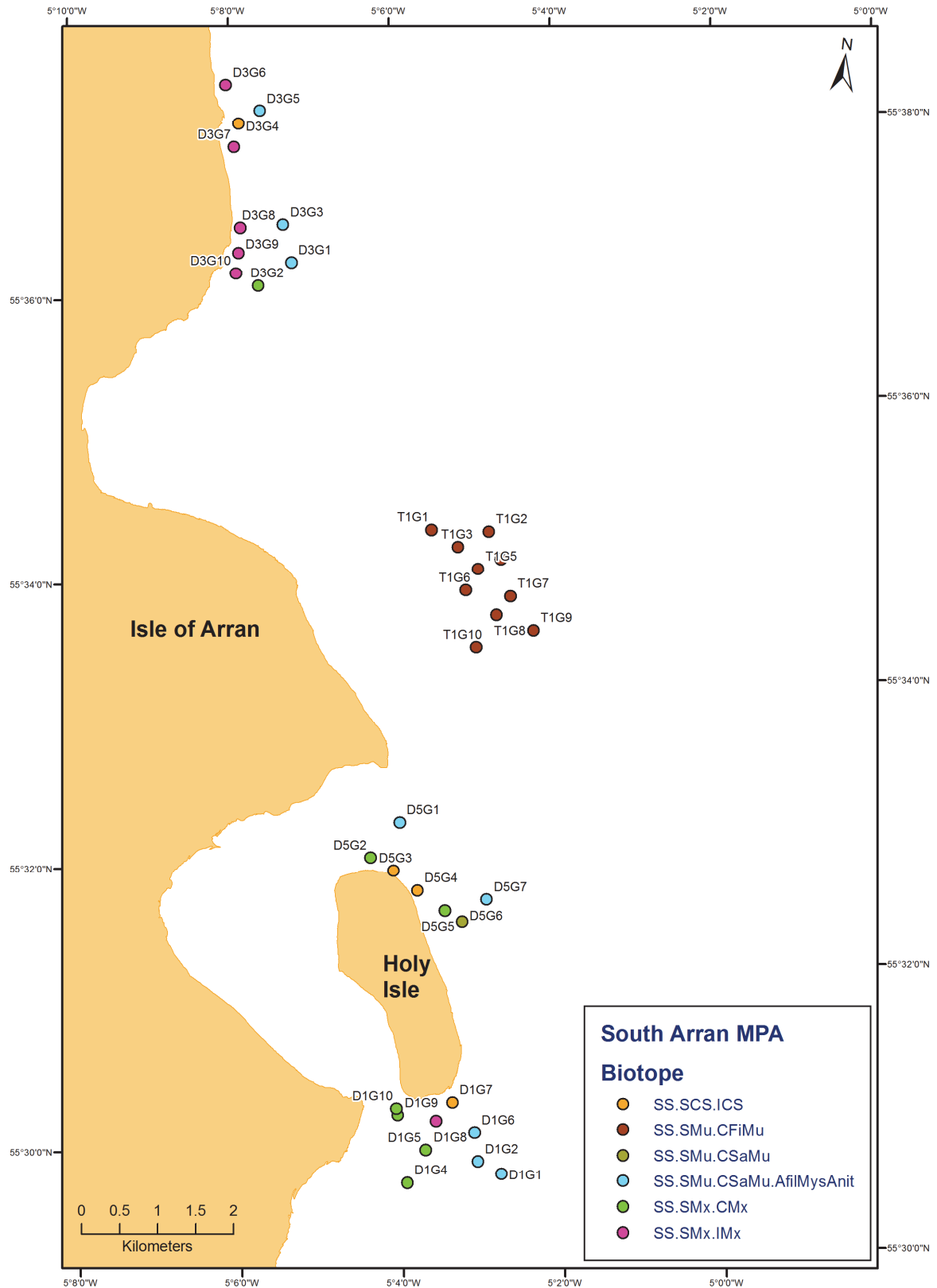


Figure 16. Biotopes at the South Arran survey stations. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2015. All rights reserved. Ordnance Survey Licence number 100017908.

Table 9. Biotopes, sediment descriptions and dominant taxa within cluster groups for Sth Arran.

Group	Station	Biotope	Sediment Type	Depth (mCD)	Dominant Taxa
a	T1G2	SS.SMu.CFiMu	Slightly Gravelly Sandy Mud	90.6	<i>Mediomastus fragilis</i> , <i>Nephtys kersivalensis</i> , <i>Harmothoe impar</i> , <i>Prionospio multibranchiata</i> , <i>Glycera unicornis</i> , <i>Spiophanes kroyeri</i> , <i>Chaetozone setosa</i> , <i>Abra alba</i> , <i>Nucula hanleyi</i> , <i>Chaetoderma nitidulum</i>
	T1G3	SS.SMu.CFiMu	Slightly Gravelly Sandy Mud	83.7	<i>Abra alba</i> , <i>Nucula hanleyi</i> , <i>Chaetoderma nitidulum</i> , <i>Scoletoma fragilis</i> , <i>Nephtys kersivalensis</i> , <i>Spiophanes kroyeri</i> , <i>Chaetozone zetlandica</i> , <i>Mediomastus fragilis</i> , <i>Processa nouveli holthuisi</i> , <i>Platyhelminthes</i> spp.
	T1G4	SS.SMu.CFiMu	Slightly Gravelly Sandy Mud	91.9	<i>Abra alba</i> , <i>Nucula nucleus</i> , <i>Nephtys incisa</i> , <i>Mediomastus fragilis</i> , <i>Scoletoma fragilis</i> , <i>Glycera alba</i> , <i>Glycera unicornis</i> , <i>Spiophanes kroyeri</i> , <i>Chaetozone setosa</i> , <i>Diplocirrus glaucus</i>
	T1G5	SS.SMu.CFiMu	Slightly Gravelly Sandy Mud	90.6	<i>Nucula nucleus</i> , <i>Abra alba</i> , <i>Prionospio multibranchiata</i> , <i>Nephtys incisa</i> , <i>Spiophanes kroyeri</i> , <i>Mediomastus fragilis</i> , <i>Nephtys norvegicus</i> , <i>Scoletoma fragilis</i> , <i>Glycera alba</i> , <i>Glycera unicornis</i>
b	T1G1	SS.SMu.CFiMu	Slightly Gravelly Sandy Mud	80.5	<i>Ennucula tenuis</i> , <i>Abra alba</i> , <i>Abra nitida</i> , <i>Dasybranchus</i> spp., <i>Chaetozone setosa</i> , <i>Spiophanes kroyeri</i> , <i>Abra</i> spp., <i>Diplocirrus glaucus</i> , <i>Scalibregma inflatum</i> , <i>Lumbrineris</i> agg.
	T1G6	SS.SMu.CFiMu	Gravelly Mud	63.1	<i>Abra alba</i> , <i>Galathowenia oculata</i> , <i>Dasybranchus</i> spp., <i>Abra nitida</i> , <i>Spiophanes kroyeri</i> , <i>Dipolydora coeca</i> , <i>Glycera alba</i> , <i>Nephtys caeca</i> , <i>Ennucula tenuis</i> , <i>Scoletoma fragilis</i>
	T1G7	SS.SMu.CFiMu	Slightly Gravelly Sandy Mud	75.3	<i>Abra alba</i> , <i>Spiophanes kroyeri</i> , <i>Turritella communis</i> , <i>Nucula nucleus</i> , <i>Notomastus</i> spp., <i>Mediomastus fragilis</i> , <i>Scoletoma fragilis</i> , <i>Nephtys incisa</i> , <i>Ampharete lindstroemi</i> agg., <i>Glycera oxycephala</i>
	T1G9	SS.SMu.CFiMu	Gravelly Muddy Sand	80.9	<i>Abra alba</i> , <i>Abra nitida</i> , <i>Spiophanes kroyeri</i> , <i>Ennucula tenuis</i> , <i>Turritella communis</i> , <i>Dasybranchus</i> spp., <i>Nucula nucleus</i> , <i>Chaetozone</i> spp., <i>Amphictene auricoma</i> , <i>Corbula gibba</i>
	T1G10	SS.SMu.CFiMu	Slightly Gravelly Sandy Mud	69.5	<i>Ennucula tenuis</i> , <i>Turritella communis</i> , <i>Abra</i> spp., <i>Abra nitida</i> , <i>Lumbrineris</i> agg., <i>Nephtys incisa</i> , <i>Amphipholis squamata</i> , <i>Spiophanes kroyeri</i> , <i>Dasybranchus</i> spp., <i>Notomastus</i> spp.

Group	Station	Biotope	Sediment Type	Depth (mCD)	Dominant Taxa
c	D3G6	SS.SMx.IMx	Muddy Sandy Gravel	4.0	<i>Scalibregma inflatum</i> , <i>Aoridae</i> spp. (female), <i>Asciacea</i> spp., <i>Cheirocratus</i> spp. (female), <i>Socarnes erythrophthalmus</i> , <i>Tectura virginea</i> , <i>Lysianassa plumosa</i> , <i>Gouldia minima</i> , <i>Cheirocratus sundevalli</i> , <i>Lumbrineris</i> agg.
	D3G7	SS.SMx.IMx	Muddy Sandy Gravel	8.5	<i>Dosinia</i> spp. (juvenile), <i>Gouldia minima</i> , <i>Scalibregma inflatum</i> , <i>Vaunthompsonia cristata</i> , <i>Pholoe inornata</i> , <i>Lysianassa plumosa</i> , <i>Leptocheirus pilosus</i> , <i>Pholoe baltica</i> , <i>Dexamine thea</i> , <i>Philine</i> spp.
	D3G10	SS.SMx.IMx	Gravelly Muddy Sand	10.4	<i>Apherusa bispinosa</i> , <i>Lysianassa plumosa</i> , <i>Vaunthompsonia cristata</i> , <i>Gouldia minima</i> , <i>Scalibregma inflatum</i> , <i>Leptochiton asellus</i> , <i>Hydroides norvegica</i> , <i>Echinocyamus pusillus</i> , <i>Nereimyra punctata</i> , <i>Spirobranchus triqueter</i>
d	D1G8	SS.SMx.IMx	Muddy Sandy Gravel	10.4	<i>Mediomastus fragilis</i> , <i>Leptochiton cancellatus</i> , <i>Lumbrineris</i> agg., <i>Aonides paucibranchiata</i> , <i>Glycera lapidum</i> agg., <i>Scalibregma inflatum</i> , <i>Echinocyamus pusillus</i> , <i>Nemertea</i> spp., <i>Owenia fusiformis</i> , <i>Phoronis</i> spp.
e	D5G3	SS.SCS.ICS	Gravel	3.9	<i>Nematoda</i> spp., <i>Amphiuridae</i> spp. (juvenile), <i>Gouldia minima</i> , <i>Malmgrenia mcintoshii</i> , <i>Leptochiton asellus</i> , <i>Leptochiton cancellatus</i> , <i>Ophiocomina nigra</i> , <i>Spirobranchus triqueter</i> , <i>Akera bullata</i> , <i>Nereiphylla rubiginosa</i>
f	D3G8	SS.SMx.IMx	Gravelly Muddy Sand	5.3	<i>Aonides paucibranchiata</i> , <i>Nematoda</i> spp., <i>Mediomastus fragilis</i> , <i>Mytilus edulis</i> (juvenile), <i>Grania</i> spp., <i>Glycera lapidum</i> agg., <i>Spirobranchus triqueter</i> , <i>Amphiuridae</i> spp. (juvenile), <i>Aonides oxycephala</i> , <i>Testudinalia testudinalis</i>
	D3G9	SS.SMx.IMx	Muddy Sandy Gravel	6.0	<i>Nematoda</i> spp., <i>Mediomastus fragilis</i> , <i>Socarnes erythrophthalmus</i> , <i>Amphiuridae</i> spp. (juvenile), <i>Sphaerosyllis</i> spp., <i>Leptocheirus hirsutimanus</i> , <i>Glycera lapidum</i> agg., <i>Grania</i> spp., <i>Malacostraca</i> spp. (larvae), <i>Thracia villosiuscula</i>
g	D1G7	SS.SCS.ICS	Sandy Gravel	9.3	<i>Echinocyamus pusillus</i> , <i>Dosinia exoleta</i> , <i>Leptochiton asellus</i> , <i>Aonides paucibranchiata</i> , <i>Gouldia minima</i> , <i>Photis longicaudata</i> , <i>Phoronis</i> spp., <i>Malmgrenia marphysae</i> , <i>Apherusa bispinosa</i> , <i>Amphiuridae</i> spp. (juvenile)
	D3G4	SS.SCS.ICS	Muddy Sandy Gravel	16.0	<i>Gouldia minima</i> , <i>Leptochiton asellus</i> , <i>Mediomastus fragilis</i> , <i>Spirobranchus triqueter</i> , <i>Echinocyamus pusillus</i> , <i>Leptochiton cancellatus</i> , <i>Lumbrineris</i> agg., <i>Cerianthus lloydii</i> , <i>Aonides paucibranchiata</i> , <i>Thracia villosiuscula</i>

Group	Station	Biotope	Sediment Type	Depth (mCD)	Dominant Taxa
	D5G4	SS.SCS.ICS	Sandy Gravel	4.9	<i>Nematoda</i> spp., <i>Dosinia exoleta</i> , <i>Gouldia minima</i> , <i>Polygordius</i> spp., <i>Spirobranchus triqueter</i> , <i>Aonides paucibranchiata</i> , <i>Amphiuridae</i> spp. (juvenile), <i>Thracia villosiuscula</i> , <i>Pholoe baltica</i> , <i>Edwardsia claparedii</i>
h	D1G9	SS.SMx.CMx	Gravelly Muddy Sand	30.2	<i>Owenia fusiformis</i> , <i>Sosane sulcata</i> , <i>Lumbrineris</i> agg., <i>Amphipholis squamata</i> , <i>Polycirrus</i> spp., <i>Kurtiella bidentata</i> , <i>Amphictene auricoma</i> , <i>Atylus vedlomensis</i> , <i>Edwardsiidae</i> spp., <i>Spiophanes kroyeri</i>
	D1G10	SS.SMx.CMx	Gravelly Muddy Sand	29.7	<i>Verruca stroemia</i> , <i>Sosane sulcata</i> , <i>Balanus balanus</i> , <i>Owenia fusiformis</i> , <i>Lumbrineris</i> agg., <i>Ampelisca tenuicornis</i> , <i>Aonides oxycephala</i> , <i>Amphiura filiformis</i> , <i>Goniada maculata</i> , <i>Kurtiella bidentata</i>
	D1G4	SS.SMx.CMx	Gravelly Muddy Sand	27.8	<i>Pseudoprotella phasma</i> , <i>Paradialychone filicaudata</i> , <i>Musculus subpictus</i> , <i>Owenia fusiformis</i> , <i>Galathowenia oculata</i> , <i>Balanus crenatus</i> , <i>Ampharete</i> spp., <i>Amphiura filiformis</i> , <i>Amphiuridae</i> spp. (juvenile), <i>Edwardsia claparedii</i>
	D1G5	SS.SMx.CMx	Gravelly Muddy Sand	16.1	<i>Sphaerodorum gracilis</i> , <i>Gouldia minima</i> , <i>Owenia fusiformis</i> , <i>Lumbrineris</i> agg., <i>Terebellides stroemii</i> , <i>Echinocyamus pusillus</i> , <i>Edwardsia claparedii</i> , <i>Ophiocomina nigra</i> , <i>Amphictene auricoma</i> , <i>Balanus crenatus</i>
i	D3G2	SS.SMx.CMx	Gravelly Muddy Sand	22.2	<i>Owenia fusiformis</i> , <i>Balanus crenatus</i> , <i>Ascidiacea</i> spp., <i>Edwardsiidae</i> spp., <i>Lumbrineris</i> agg., <i>Anomia ephippium</i> , <i>Galathowenia oculata</i> , <i>Mya truncata</i> , <i>Ampharetidae</i> spp. (juvenile), <i>Amphictene auricoma</i>
	D5G2	SS.SMx.CMx	Gravelly Muddy Sand	17.9	<i>Balanus crenatus</i> , <i>Verruca stroemia</i> , <i>Dosinia exoleta</i> , <i>Owenia fusiformis</i> , <i>Lumbrineris</i> agg., <i>Ascidiidae</i> spp., <i>Aponuphis bilineata</i> , <i>Spirobranchus triqueter</i> , <i>Euclymene oerstedii</i> , <i>Eulalia bilineata</i>
	D5G5	SS.SMx.CMx	Gravelly Muddy Sand	26.3	<i>Balanus crenatus</i> , <i>Lumbrineris</i> agg., <i>Ascidiidae</i> spp., <i>Galathowenia oculata</i> , <i>Owenia fusiformis</i> , <i>Jasmineira caudata</i> , <i>Timoclea ovata</i> , <i>Edwardsia claparedii</i> , <i>Polycarpa</i> spp., <i>Amphiuridae</i> spp. (juvenile)
j	D3G3	SS.SMu.CSaMu. AfilMysAnit	Slightly Gravelly Muddy Sand	43.1	<i>Abra</i> spp., <i>Chaetozone setosa</i> , <i>Abra alba</i> , <i>Nucula hanleyi</i> , <i>Spiophanes kroyeri</i> , <i>Notomastus</i> spp., <i>Amphiura filiformis</i> , <i>Mediomastus fragilis</i> , <i>Edwardsiidae</i> spp., <i>Amphiura</i> spp.

Group	Station	Biotope	Sediment Type	Depth (mCD)	Dominant Taxa
k	D5G7	SS.SMu.CSaMu. AfilMysAnit	Slightly Gravelly Muddy Sand	51.3	Amphiuridae spp. (juvenile), <i>Galathowenia oculata</i> , <i>Owenia fusiformis</i> , <i>Kurtiella bidentata</i> , <i>Nemertea</i> spp., <i>Amphiura filiformis</i> , <i>Spio</i> spp., <i>Spiophanes kroyeri</i> , <i>Chaetozone christiei</i> , <i>Polycarpa</i> spp.
l	D1G1	SS.SMu.CSaMu. AfilMysAnit	Slightly Gravelly Muddy Sand	48.7	<i>Galathowenia oculata</i> , <i>Abra alba</i> , <i>Amphiura filiformis</i> , <i>Polycarpa</i> spp., Amphiuridae spp. (juvenile), <i>Timoclea ovata</i> , <i>Nephtys</i> spp. (juvenile), <i>Harmothoe impar</i> , <i>Euclymene</i> spp., <i>Edwardsia claparedii</i>
m	D1G2	SS.SMu.CSaMu. AfilMysAnit	Slightly Gravelly Muddy Sand	43.2	<i>Abra alba</i> , <i>Galathowenia oculata</i> , <i>Abra nitida</i> , <i>Owenia fusiformis</i> , <i>Amphiura filiformis</i> , Amphiuridae spp. (juvenile), <i>Nucula hanleyi</i> , <i>Polycarpa</i> spp., <i>Phaxas pellucidus</i> , <i>Dosinia exoleta</i>
	D1G6	SS.SMu.CSaMu. AfilMysAnit	Gravelly Muddy Sand	35.2	<i>Galathowenia oculata</i> , Amphiuridae spp. (juvenile), <i>Amphiura filiformis</i> , <i>Balanus crenatus</i> , <i>Owenia fusiformis</i> , <i>Edwardsia claparedii</i> , <i>Dosinia exoleta</i> , <i>Nemertea</i> spp., <i>Spiophanes kroyeri</i> , <i>Timoclea ovata</i>
	D3G1	SS.SMu.CSaMu. AfilMysAnit	Slightly Gravelly Muddy Sand	42.3	<i>Abra alba</i> , <i>Amphiura filiformis</i> , <i>Abra nitida</i> , <i>Chaetozone setosa</i> , <i>Galathowenia oculata</i> , <i>Diplocirrus glaucus</i> , <i>Owenia fusiformis</i> , <i>Nucula hanleyi</i> , <i>Scalibregma inflatum</i> , Amphiuridae spp. (juvenile)
	D3G5	SS.SMu.CSaMu. AfilMysAnit	Slightly Gravelly Muddy Sand	40.0	<i>Galathowenia oculata</i> , <i>Owenia fusiformis</i> , Amphiuridae spp. (juvenile), <i>Amphiura filiformis</i> , <i>Abra alba</i> , <i>Nucula hanleyi</i> , <i>Chaetozone setosa</i> , <i>Amphictene auricoma</i> , <i>Diplocirrus glaucus</i> , <i>Parvicardium scabrum</i>
	D5G1	SS.SMu.CSaMu. AfilMysAnit	Slightly Gravelly Sand	20.9	<i>Galathowenia oculata</i> , <i>Owenia fusiformis</i> , <i>Edwardsia claparedii</i> , Amphiuridae spp. (juvenile), <i>Amphiura filiformis</i> , <i>Thyasira flexuosa</i> , <i>Paradialychone filicaudata</i> , <i>Thracia phaseolina</i> , <i>Laonice bahusiensis</i> , <i>Diplocirrus glaucus</i>
n	D5G6	SS.SMu.CSaMu	Slightly Gravelly Muddy Sand	48.2	<i>Abra alba</i> , <i>Nucula nucleus</i> , <i>Thyasira flexuosa</i> , <i>Chaetozone christiei</i> , <i>Galathowenia oculata</i> , <i>Spiophanes kroyeri</i> , <i>Diplocirrus glaucus</i> , <i>Amphictene auricoma</i> , Amphiuridae spp. (juvenile), <i>Abra nitida</i>
	T1G8	SS.SMu.CFiMu	Slightly Gravelly Sandy Mud	80.0	<i>Abra alba</i> , <i>Spirobranchus triqueter</i> , <i>Corbula gibba</i> , <i>Ennucula tenuis</i> , <i>Amphictene auricoma</i> , <i>Nemertea</i> spp., Ophiurida spp. (juvenile), <i>Nephtys hombergii</i> , <i>Abra nitida</i> , <i>Nereimyra punctata</i>

3.7 Biotope Composition (Loch Fyne)

The groups defined from cluster analysis have been tabulated with biotope, sediment type, water depth and dominant taxa in Table 10 and the spatial distribution of biotopes mapped in Figure 17 along with the *Limaria* bed boundary defined from surveys undertaken in 2012 (Moore *et al.* 2013). The stations labelled “SG” in the upper loch are not particularly well defined in terms of biotope but the infauna in this area are similar to those often recorded in burrowed mud communities. Whilst these have been assigned **SS.SMu.CFiMu** (Circalittoral fine mud) this area may include examples of **SS.SMu.CFiMu.MegMax** (Burrowing megafauna and *Maxmuelleria lankesteri* in circalittoral mud) or possibly **SS.SMu.CFiMu.SpnMeg** (Seapens and burrowing megafauna in circalittoral fine mud). Characterisation of such biotopes from grab samples is problematic given that they typically under sample larger taxa and video footage would be required to be certain of specific biotope or sub-biotope classification.

The stations in groups b, c and d in the lower loch all include moderate densities of the flame shell, *Limaria hians*, and have therefore been classified as **SS.SMx.IMx.Lim** (*Limaria hians* beds in tide-swept sublittoral muddy mixed sediment). The single station in group e (FG-06) is not particularly well defined so on the basis of its environmental characteristics has been assigned the biotope **SS.SMx.IMx** (Infralittoral mixed sediment). The stations in groups f, g and h are all gravelly muddy sands often dominated by brittlestars (notably *Ophiocomina nigra* or *Ophiothrix* spp.) so have been classified as **SS.SMx.CMx.OphMx** (*Ophiothrix fragilis* and/or *Ophiocomina nigra* brittlestar beds on sublittoral mixed sediment). Stations in Group h generally exhibit lower numbers of brittlestars so the biotope determination of **SS.SMx.CMx.OphMx** is uncertain and these stations could represent an intermediate community or reflect patchiness in brittlestar distribution. As such the stations in group h could also be grouped at a higher level e.g. **SS.SMx.IMx** (Infralittoral mixed sediment).

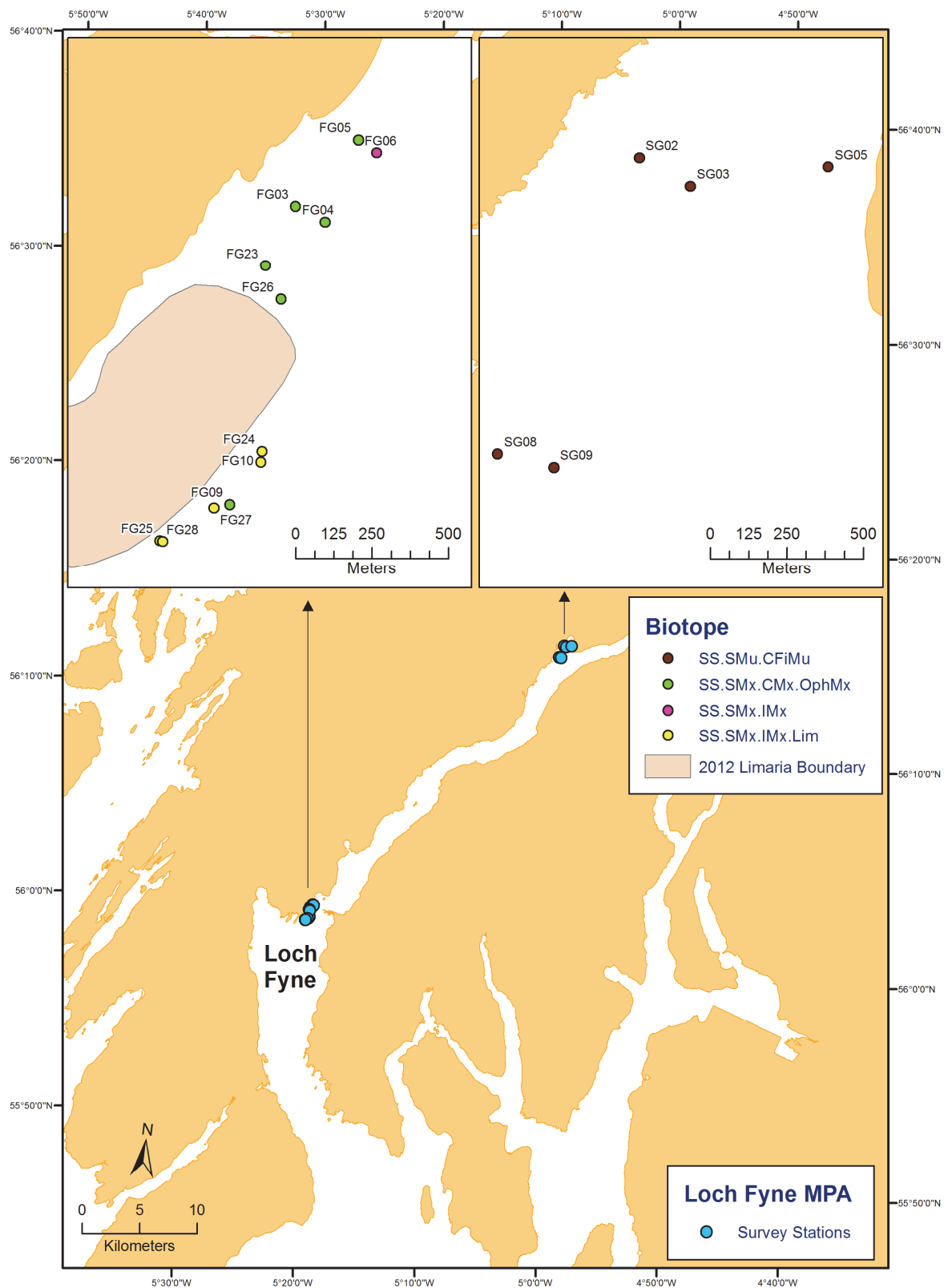


Figure 17. Biotopes at the Loch Fyne grab survey stations. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2016. All rights reserved. Ordnance Survey Licence number 100017908.

Table 10. Biotopes, sediment descriptions and dominant taxa within cluster groups for Loch Fyne grab samples.

Group	Station	Biotope	Sediment Type	Depth mCD	Dominant Taxa
Group a	SG-02	SS.SMu.CFiMu	Slightly Gravelly Sandy Mud	46.9	<i>Amphiura chiajei</i> , <i>Chaetozone setosa</i> , <i>Diplocirrus glaucus</i> , <i>Prionospio multibranchiata</i> cf., <i>Thyasira flexuosa</i> , <i>Pholoe baltica</i> , <i>Aphelochaeta marioni</i> , <i>Cylichna cylindracea</i> , <i>Glycera alba</i> , <i>Nephtys incisa</i>
	SG-03	SS.SMu.CFiMu	Slightly Gravelly Sandy Mud	63	<i>Amphiura chiajei</i> , <i>Thyasira flexuosa</i> , <i>Ennucula tenuis</i> , <i>Cylichna cylindracea</i> , <i>Diplocirrus glaucus</i> , <i>Goniada maculata</i> , <i>Spiophanes kroyeri</i> , <i>Pectinaria (Pectinaria) belgica</i> , <i>Polyphysia crassa</i> , <i>Eudorella emarginata</i>
	SG-05	SS.SMu.CFiMu	Slightly Gravelly Sandy Mud	37.2	<i>Diplocirrus glaucus</i> , <i>Amphiura chiajei</i> , <i>Nemertea</i> , <i>Prionospio multibranchiata</i> cf., <i>Cylichna cylindracea</i> , <i>Ancistrosyllis groenlandica</i> , <i>Pilargis verrucosa</i> , <i>Malmgrenia marphysae</i> , <i>Polycirrus</i> spp., <i>Notomastus</i> spp.
	SG-08	SS.SMu.CFiMu	Slightly Gravelly Sandy Mud	38.9	<i>Diplocirrus glaucus</i> , <i>Amphiura chiajei</i> , <i>Nucula hanleyi</i> , <i>Spiophanes kroyeri</i> , <i>Tharyx killariensis</i> , <i>Ancistrosyllis groenlandica</i> , <i>Chaetozone setosa</i> , <i>Amphictene auricoma</i> , <i>Oxydromus flexuosus</i> , <i>Pholoe inornata</i>
	SG-09	SS.SMu.CFiMu	Slightly Gravelly Sandy Mud	79.8	<i>Amphiura chiajei</i> , <i>Chaetozone setosa</i> , <i>Spiophanes kroyeri</i> , <i>Aphelochaeta marioni</i> , <i>Abra nitida</i> , <i>Glycera alba</i> , <i>Diplocirrus glaucus</i> , <i>Praxillella affinis</i> , <i>Scalibregma inflatum</i> , <i>Leptosynapta</i> sp.
Group b	FG-25	SS.SMx.IMx.Lim	Gravelly Muddy Sand	10.8	<i>Ophiothrix fragilis</i> , <i>Nereimyra punctata</i> , <i>Ophiopholis aculeata</i> , <i>Ophiocomina nigra</i> , <i>Harmothoe</i> spp., <i>Ensis ensis</i> , <i>Onoba semicostata</i> , <i>Lumbrineris</i> agg., <i>Mya arenaria</i> , <i>Glycera lapidum</i> agg.
Group c	FG-27	SS.SMx.IMx.Lim	Gravelly Muddy Sand	10.8	<i>Onoba semicostata</i> , <i>Nematoda</i> , <i>Nereimyra punctata</i> , <i>Modiolus modiolus</i> , <i>Pholoe inornata</i> , <i>Ophiothrix fragilis</i> , <i>Limaria hians</i> , <i>Spirobranchus triqueter</i> , <i>Sphaerodorum gracilis</i> , <i>Ophiocomina nigra</i>

Group	Station	Biotope	Sediment Type	Depth mCD	Dominant Taxa
	FG-10	SS.SMx.IMx.Lim		7.5	<i>Nereimyra punctata</i> , <i>Ophiothrix fragilis</i> , Nematoda, <i>Pholoe inornata</i> , <i>Ophiocomina nigra</i> , <i>Modiolus modiolus</i> , <i>Hiatella arctica</i> , <i>Limaria hians</i> , <i>Golfingia (Golfingia) vulgaris vulgaris</i> , <i>Sphaerodorum gracilis</i>
Group d	FG-24	SS.SMx.IMx.Lim		9.7	<i>Nereimyra punctata</i> , <i>Ophiothrix fragilis</i> , <i>Limaria hians</i> , <i>Pholoe inornata</i> , <i>Modiolus modiolus</i> , <i>Ophiocomina nigra</i> , Nematoda, <i>Sphaerodorum gracilis</i> , <i>Flabelligera affinis</i> , <i>Polycirrus</i> spp.
	FG-28	SS.SMx.IMx.Lim		10.8	<i>Nereimyra punctata</i> , Nematoda, <i>Pholoe inornata</i> , <i>Spirobranchus triqueter</i> , <i>Golfingia (Golfingia) vulgaris vulgaris</i> , <i>Modiolus modiolus</i> , <i>Leptochiton asellus</i> , <i>Onoba semicostata</i> , <i>Hiatella arctica</i> , <i>Limaria hians</i>
Group e	FG-06	SS.SMx.IMx	Gravelly Muddy Sand	12.9	<i>Pseudopolydora pulchra</i> , <i>Phaxas pellucidus</i> , <i>Mya truncata</i> , <i>Thyasira flexuosa</i> , <i>Dosinia lupinus</i> , Nemertea, <i>Ampelisca tenuicornis</i> , <i>Thracia villosiuscula</i> , <i>Pholoe inornata</i> , <i>Jasmineira elegans</i>
Group f	FG-04	SS.SMx.CMx.OphMx	Gravelly Muddy Sand	10.5	<i>Ophiocomina nigra</i> , <i>Spirobranchus triqueter</i> , <i>Lysianassa plumosa</i> , <i>Dosinia lupinus</i> , <i>Glycera lapidum</i> agg., <i>Balanus balanus</i> , <i>Moerella donacina</i> , <i>Lumbrineris</i> agg., <i>Sphaerodorum gracilis</i> , <i>Terebellides stroemii</i>
	FG-09	SS.SMx.CMx.OphMx	Gravelly Muddy Sand	11.1	<i>Ophiocomina nigra</i> , <i>Gouldia minima</i> , Nematoda, <i>Sphaerodorum gracilis</i> , <i>Leptochiton asellus</i> , <i>Mediomastus fragilis</i> , <i>Lumbrineris</i> agg., <i>Polycirrus</i> spp., <i>Thracia villosiuscula</i> , <i>Astarte sulcata</i>
Group g	FG-26	SS.SMx.CMx.OphMx	Gravelly Muddy Sand	12.9	<i>Sphaerodorum gracilis</i> , <i>Ophiocomina nigra</i> , <i>Spirobranchus triqueter</i> , <i>Glycera lapidum</i> agg., <i>Lumbrineris</i> agg., <i>Mediomastus fragilis</i> , <i>Leptochiton asellus</i> , Nemertea, <i>Aonides paucibranchiata</i> , <i>Gouldia minima</i>

Group	Station	Biotope	Sediment Type	Depth mCD	Dominant Taxa
	FG-03	SS.SMx.CMx.OphMx	Gravelly Muddy Sand	9.4	<i>Gouldia minima</i> , <i>Photis longicaudata</i> , <i>Vaunthompsonia cristata</i> , <i>Dosinia lupinus</i> , <i>Nucula nitidosa</i> , <i>Kurtiella bidentata</i> , <i>Thracia villosiuscula</i> , <i>Thyasira flexuosa</i> , <i>Moerella donacina</i> , <i>Ophiothrix fragilis</i>
Group h	FG-05	SS.SMx.CMx.OphMx	Gravelly Muddy Sand	9	<i>Spirobranchus triqueter</i> , <i>Gouldia minima</i> , <i>Thyasira flexuosa</i> , <i>Ennucula tenuis</i> , <i>Lysianassa plumosa</i> , <i>Ophiothrix luetkeni</i> , <i>Moerella donacina</i> , <i>Amphipholis squamata</i> , <i>Polycirrus</i> spp., <i>Nucula nucleus</i>
	FG-23	SS.SMx.CMx.OphMx	Slightly Gravelly Muddy Sand	10.3	<i>Spirobranchus triqueter</i> , <i>Ophiocomina nigra</i> , <i>Gouldia minima</i> , <i>Thyasira flexuosa</i> , <i>Leptochiton asellus</i> , <i>Phoronis</i> spp., <i>Nemertea</i> , <i>Thracia villosiuscula</i> , <i>Pseudopolydora paucibranchiata</i> cf., <i>Mediomastus fragilis</i>

4. LOCH FYNE (OTTER SPIT) *LIMARIA* CORE SAMPLING

4.1 Primary and derived biological parameters

The biological parameters derived for each core sample from the permanent dive transects in Loch Fyne are provided in Table 11 and highlight a high level of variability both between and within the survey transects. *Limaria* density ranged from zero to eight individuals with highest numbers generally recorded at transects FS1 and FS5 and no *Limaria* present at transect FS4. Whilst variable the other biological parameters generally correlated to *Limaria* density with highest species richness, density and diversity recorded in samples with higher densities of *Limaria*. The number of species recorded ranged from 5 taxa (FS6.1 and FS4.5) to 64 taxa (FS1.3), with transects FS1 and FS5 which had greater numbers of *Limaria* generally having the highest number of taxa but all transects were highly variable. Transect 4 (no *Limaria* present) consistently had the lowest number of taxa ranging from 5 to 22 taxa. Total abundance was also highly variable and exhibited similar patterns to the number of taxa with abundances ranging from 5 (FS6.1) to 418 taxa (FS5.6). The majority of samples had fewer than 100 animals with over 50% of the samples having fewer than 50 individuals. Highest abundances tended to occur at samples along transects FS1 and FS5 which had higher *Limaria* densities. Pielou's evenness ranged from moderate to high with values ranging from 0.59 (FS4.5) to 1 (FS6.1) and this parameter was less correlated to *Limaria* density. Shannon's diversity ranged from rather low to moderately high with values ranging from 1.37 (FS4.5) to 4.85 (FS1.1) and as described for other parameters highest levels of Shannon's diversity tended to occur in samples with higher densities of *Limaria*.

Table 11. Primary and derived biological parameters recorded at the Loch Fyne *Limaria* stations.

Station	Number of Species	Total Abundance (A)	Margalef's d	Pielou's Evenness J	Shannon's Diversity H'	<i>Limaria</i> Density
FS1.1	52	217	8.92	0.86	4.85	8
FS1.2	12	20	3.67	0.94	3.38	0
FS1.3	64	370	9.98	0.76	4.47	6
FS1.4	14	24	4.09	0.94	3.57	0
FS1.5	49	289	8.47	0.79	4.42	7
FS3.1	20	38	5.22	0.84	3.61	0
FS3.2	11	26	3.07	0.72	2.50	0
FS3.3	41	153	7.36	0.76	3.98	2
FS3.4	30	97	6.12	0.91	4.41	5
FS3.5	9	27	2.43	0.71	2.26	0
FS4.1	7	21	1.97	0.85	2.37	0
FS4.2	6	9	2.28	0.97	2.50	0
FS4.3	9	14	3.03	0.89	2.84	0
FS4.4	10	22	2.91	0.86	2.86	0
FS4.5	5	26	1.23	0.59	1.37	0
FS4.6	22	49	5.14	0.89	3.92	0
FS5.1	15	41	3.50	0.85	3.22	1
FS5.2	10	15	2.95	0.93	2.96	0
FS5.3	45	331	7.58	0.75	4.14	5
FS5.4	52	285	7.78	0.80	4.41	5
FS5.5	36	173	6.60	0.82	4.21	3
FS5.6	60	418	9.44	0.77	4.51	6
FS6.1	5	5	2.49	1.00	2.32	0
FS6.2	24	56	4.97	0.80	3.51	0
FS6.3	41	93	8.16	0.89	4.68	0
FS6.4	26	40	5.69	0.93	4.16	0
FS6.5	21	42	5.08	0.85	3.67	0
FS6.6	25	62	5.57	0.87	3.98	1

4.2 Species Composition

The diver cores collected in Loch Fyne collected a total of 200 taxa (Annex 8) although many of the taxa recorded were present in relatively low numbers. The benthic communities were typified by a range of invertebrates including barnacles, bivalve molluscs, ophiroid echinoderms and a variety of polychaetes. Flame shells were present at all bar one transect (FS4) and were present at 11 of the 28 sample stations. Dominant taxa recorded during the survey included Nematoda spp., *Balanus balanus*, *Ophiocomina nigra*, *Onoba semicostata*, *Pholoe inornata*, *Verruca stroemia*, *Modiolus modiolus*, *Alvania punctura* and *Thracia villosiuscula* which accounted for 51% of the total abundance although the majority of taxa occurred in fewer than 50% of the samples with *Thracia villosiuscula*, *Ophiocomina nigra*, *Gouldia minima*, juvenile/immature *M. modiolus* and *Spirobranchus triqueter* the most ubiquitous taxa recorded at 50% to 85% of samples. Fragments of live maerl were also recorded at a few of the sample locations albeit in low quantities.

Table 12. Dominant taxa (by abundance) recorded at the Loch Fyne Limaria survey stations.

Taxa	Total Abundance	Mean Abundance	Cumulative % Abundance	No. of Samples	% of Samples
Nematoda spp.	452	16.14	15.25	12	43
<i>Balanus balanus</i>	212	7.57	22.41	9	32
<i>Ophiocomina nigra</i>	188	6.71	28.75	22	79
<i>Onoba semicostata</i>	149	5.32	33.78	9	32
<i>Pholoe inornata</i>	148	5.29	38.78	12	43
<i>Verruca stroemia</i>	107	3.82	42.39	9	32
<i>Modiolus modiolus</i> (juv.)	101	3.61	45.80	14	50
<i>Alvania punctura</i>	79	2.82	48.46	8	29
<i>Thracia villosiuscula</i>	78	2.79	51.10	24	86
<i>Hiatella arctica</i>	73	2.61	53.56	8	29
<i>Spirobranchus triqueter</i>	70	2.50	55.92	14	50
<i>Flabelligera affinis</i>	66	2.36	58.15	10	36
<i>Nereimyra punctata</i>	62	2.21	60.24	11	39
<i>Gouldia minima</i>	58	2.07	62.20	17	61
<i>Polycirrus</i> spp.	50	1.79	63.89	10	36
<i>Limaria hians</i>	49	1.75	65.54	11	39
<i>Psamathe fusca</i>	46	1.64	67.09	9	32
<i>Sphaerodorum gracilis</i>	44	1.57	68.58	12	43
<i>Pherusa plumosa</i>	37	1.32	69.83	5	18
<i>Nucula nucleus</i>	35	1.25	71.01	7	25

4.3 Multivariate Analysis

The results of cluster analysis and nMDS on the Loch Fyne diver core samples are provided in Figure 18. Similarities between samples range from around 10% to just below 70% highlighting a quite varied benthic assemblage. The SIMPROF routine identified six groups of samples as highlighted in Figure 18 although these included three groups containing a single station. The results of SIMPER analysis on the cluster groups derived from SIMPROF which highlights characteristic taxa are provided in Annex 9 whilst a summary of the groups with top 10 most abundant taxa for each sample and biotope type is provided in Table 13.

Group a comprises of a single sample from transect FS6 (sample FS6.1) which was relatively impoverished with only five taxa present in low numbers namely juvenile *Polydora* sp., *Macrochaeta* spp., juvenile *Dosinia* spp., *Gouldia minima* and *Thracia villosiuscula*. Group b was separated from the remaining samples at around 15% similarity and included a variety of samples from transects FS1, FS3, FS4 and FS5 which were dominated by the ophiuroid *Ophiocomina nigra* along with lower numbers of taxa such as *Thracia villosiuscula*, *Moerella donacina*, *Cerianthus lloydii*, *G. minima*, *Ophiothrix fragilis*, *Timoclea ovata* and *Lumbrineris* agg. Samples within this group (and group f described below) exhibited relatively low levels of similarity highlighting a relatively varied assemblage in contrast to the *Limaria* samples in group e which exhibited a more consistent benthic community.

Groups c and d were closely associated to group e and each comprised of a single sample (FS3.4 and FS1.3 respectively). Both of these samples had moderate numbers of the flame shell *Limaria hians* along with taxa such as Nematoda spp., *Flabelligera affinis*, Ascidiacea, *Sphaerodorum gracilis*, *Psamathe fusca*, *Modiolus modiolus* and *O. nigra* (FS3.4) or Nematoda spp., *Alvania punctura*, *Onoba semicostata*, *Pholoe inornata*, *Nereimyra punctata*, *Flabelligera affinis*, *Pherusa flabellata*, *T. villosiuscula* and *M. modiolus* (FS1.3). Group E comprised of a number of samples from transects 1, 3, 5 and 6 with relatively high levels of similarity (above 50% similarity) which also had varying densities of *L. hians* along with Nematoda spp., *M. modiolus*, *Onoba semicostata*, *Balanus balanus*, *Pholoe inornata*, *O. nigra*, *Polycirrus* spp., *F. affinis* and *Verruca stroemia*.

Group f included a number of samples from transect 6 and one sample from transect 4 which were characterised by the bivalves *G. minima* and *T. villosiuscula* along with a variety of other taxa in lower numbers including *Spirobranchus triqueter*, juvenile *Dosinia* spp., *Photis longicaudata*, *Terebellides stroemii*, *Lysianassa plumosa*, Nemertea spp., *M. modiolus* and *Nereiphylla rubiginosa*.

The groups defined from cluster analysis have been tabulated with biotope and dominant taxa in Table 13. The sample in group a (FS6.1) is rather impoverished and poorly defined in terms of biotope and has been classified as **SS.SMx.IMx** (Infralittoral mixed sediment). Samples in group b are generally dominated by brittlestars (notably *O. nigra*) so have been classified as **SS.SMx.CMx.OphMx** (*O. fragilis* and/or *O. nigra* brittlestar beds on sublittoral mixed sediment). Groups c, d and e all include samples with moderate densities of *L. hians* and have therefore been classified as **SS.SMx.IMx.Lim** (*Limaria hians* beds in tide-swept sublittoral muddy mixed sediment). Samples in group f (primarily transect 6) are not particularly well defined and been assigned the biotope **SS.SMx.IMx** (Infralittoral mixed sediment) although they are associated with the *Limaria* biotope samples in groups c to e (albeit at a lower level of similarity) so may represent a similar but less diverse infaunal community which lacks significant numbers of *Limaria*.

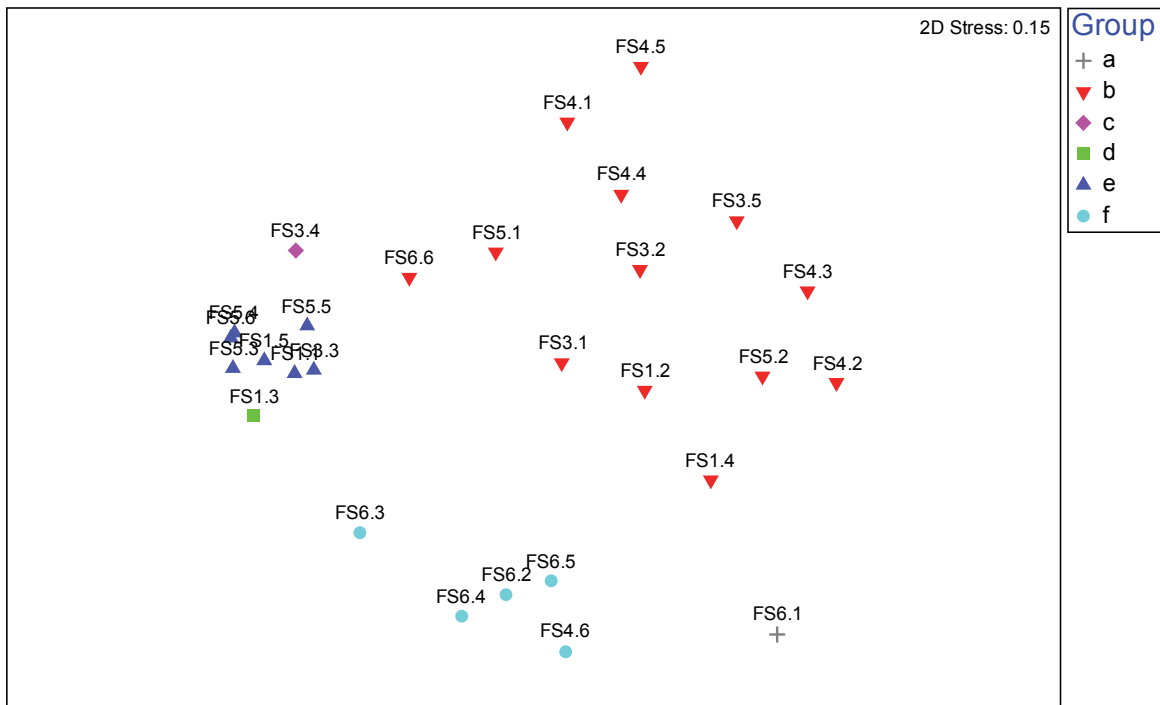
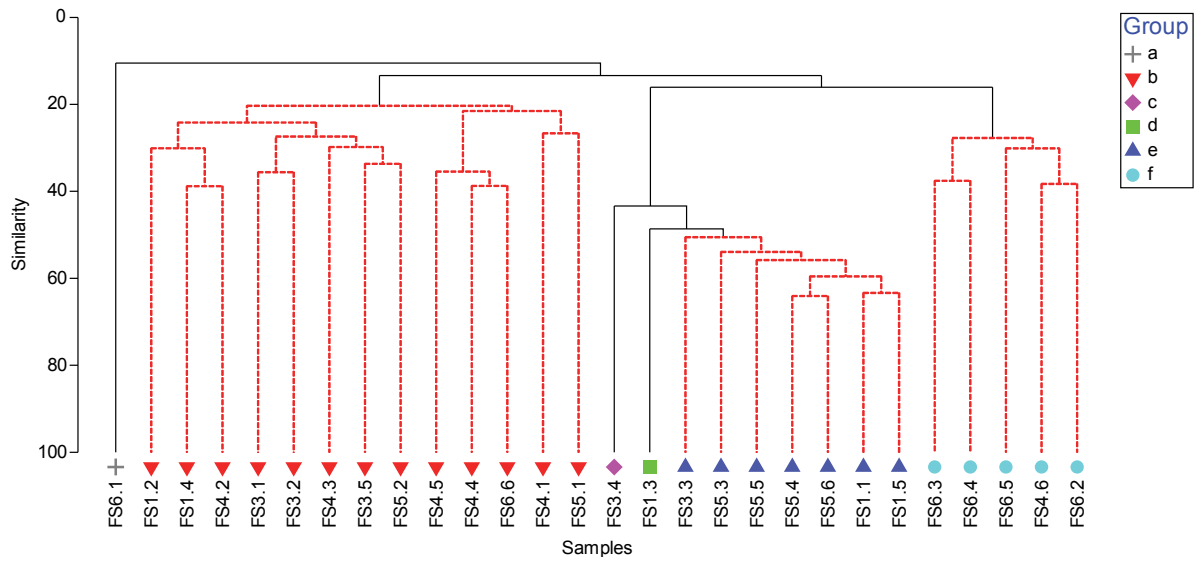


Figure 18. Results of cluster analysis and nMDS for the Loch Fyne *Limaria* diver core samples.

Table 13. Biotopes, and dominant taxa within cluster groups for the Loch Fyne diver core *Limaria* samples.

Group	Sample	Biotope	Dominant Taxa
Group a	FS6.1	SS.SMx.IMx ?	<i>Polydora</i> sp. (juvenile), <i>Macrochaeta</i> spp., <i>Dosinia</i> spp. (juvenile), <i>Gouldia minima</i> , <i>Thracia villosiuscula</i> , <i>Grania</i> sp., <i>Tubificoides amplivasatus</i> , <i>Protodorvillea kefersteini</i> , <i>Leodice harassii</i> , <i>Lysidice unicornis</i>
	FS1.2	SS.SMx.CMx.OphMx	<i>Dosinia exoleta</i> , <i>Mediomastus fragilis</i> , <i>Westwoodilla caecula</i> , <i>Ophiocomina nigra</i> , <i>Thracia villosiuscula</i> , <i>Protodorvillea kefersteini</i> , <i>Sphaerodorum gracilis</i> , <i>Aonides oxycephala</i> , <i>Cerianthus lloydii</i> , <i>Dosinia lupinus</i>
	FS1.4	SS.SMx.CMx.OphMx	<i>Moerella donacina</i> , Sabellinae (<i>Dialychone</i> sp.), <i>Owenia fusiformis</i> , <i>Cerianthus lloydii</i> , <i>Dosinia lupinus</i> , <i>Thracia villosiuscula</i> , <i>Glycera lapidum</i> agg., <i>Pseudopolydora paucibranchiata</i> cf., <i>Paradoneis lyra</i> , <i>Scalibregma inflatum</i>
	FS3.1	SS.SMx.CMx.OphMx	<i>Ophiocomina nigra</i> , <i>Thracia villosiuscula</i> , <i>Sphaerodorum gracilis</i> , <i>Spirobranchus triqueter</i> , <i>Psammechinus miliaris</i> , <i>Lumbrineris</i> agg., <i>Glycera lapidum</i> agg., <i>Acanthicolepis asperrima</i> , <i>Syllis armillaris</i> , <i>Aonides paucibranchiata</i>
	FS3.2	SS.SMx.CMx.OphMx	<i>Ophiocomina nigra</i> , <i>Monoculodes</i> sp., <i>Thracia villosiuscula</i> , <i>Euchone rosea</i> , <i>Aonides paucibranchiata</i> , <i>Sosane sulcata</i> , <i>Chaetozone zetlandica</i> , <i>Maldanidae</i> sp., <i>Echinocyamus pusillus</i> , <i>Gouldia minima</i>
Group b	FS3.5	SS.SMx.CMx.OphMx	<i>Ophiocomina nigra</i> , <i>Moerella donacina</i> , <i>Owenia fusiformis</i> , <i>Dosinia</i> spp. (juvenile), <i>Lumbrineris</i> agg., Sabellidae spp., <i>Corella parallelogramma</i> , <i>Dosinia lupinus</i> , <i>Thracia</i> sp., <i>Grania</i> sp.
	FS4.1	SS.SMx.CMx.OphMx	<i>Ophiocomina nigra</i> , <i>Spirobranchus triqueter</i> , <i>Leptochiton asellus</i> , <i>Cerianthus lloydii</i> , <i>Nereimyra punctata</i> , <i>Pholoe baltica</i> , <i>Harmothoe</i> spp., <i>Grania</i> sp., <i>Tubificoides amplivasatus</i> , <i>Protodorvillea kefersteini</i>
	FS4.2	SS.SMx.CMx.OphMx	<i>Cerianthus lloydii</i> , <i>Moerella donacina</i> , <i>Kurtiella bidentata</i> , <i>Ophiocomina nigra</i> , <i>Thracia villosiuscula</i> , <i>Phoronis</i> spp., <i>Grania</i> sp., <i>Tubificoides amplivasatus</i> , <i>Protodorvillea kefersteini</i> , <i>Leodice harassii</i>
	FS4.3	SS.SMx.CMx.OphMx	<i>Ophiopholis aculeata</i> , <i>Ophiocomina nigra</i> , Sabellidae spp., <i>Aonides paucibranchiata</i> , Ampharetidae sp. (juvenile), <i>Pista mediterranea</i> , Ophiuroidea spp. (juvenile), <i>Moerella donacina</i> , <i>Thracia villosiuscula</i> , <i>Grania</i> sp.
	FS4.4	SS.SMx.CMx.OphMx	<i>Ophiocomina nigra</i> , <i>Aonides oxycephala</i> , <i>Ophiothrix fragilis</i> , <i>Lumbrineris</i> agg., <i>Pista mediterranea</i> , <i>Polycirrus</i> spp., <i>Scalibregma inflatum</i> , <i>Strongylocentrotus droebachiensis</i> , <i>Nucula nucleus</i> , <i>Thracia villosiuscula</i>
FS4.5	SS.SMx.CMx.OphMx	<i>Ophiocomina nigra</i> , <i>Ophiothrix fragilis</i> , <i>Leptosynapta inhaerens</i> , <i>Amphipholis squamata</i> , <i>Timoclea ovata</i> , <i>Grania</i> sp., <i>Tubificoides amplivasatus</i> , <i>Protodorvillea kefersteini</i> , <i>Leodice harassii</i> , <i>Lysidice unicornis</i>	

Group	Sample	Biotope	Dominant Taxa
	FS5.1	SS.SMx.CMx.OphMx	<i>Balanus balanus</i> , <i>Microdeutopus</i> sp. (female), <i>Ophiocomina nigra</i> , <i>Spirobranchus triqueter</i> , <i>Leptosynapta</i> sp., <i>Dosinia exoleta</i> , <i>Thracia villosiuscula</i> , <i>Terebellides stroemii</i> , Opheliidae sp., <i>Strongylocentrotus droebachiensis</i>
	FS5.2	SS.SMx.CMx.OphMx	<i>Ophiocomina nigra</i> , <i>Dosinia</i> spp. (juvenile), <i>Thracia villosiuscula</i> , <i>Goniada maculata</i> , <i>Chaetozone zetlandica</i> , <i>Urothoe elegans</i> , <i>Idotea granulosa</i> , <i>Strongylocentrotus droebachiensis</i> , <i>Moerella donacina</i> , <i>Grania</i> sp.
	FS6.6	SS.SMx.CMx.OphMx	<i>Ophiocomina nigra</i> , <i>Actiniaria</i> spp., <i>Ophiothrix fragilis</i> , <i>Modiolus modiolus</i> , <i>Pholoe inornata</i> , <i>Polycirrus</i> spp., <i>Lumbrineris</i> agg., <i>Nereimyra punctata</i> , <i>Psamathe fusca</i> , <i>Flabelligera affinis</i>
Group c	FS3.4	SS.SMx.IMx.Lim	Nematoda spp., <i>Flabelligera affinis</i> , Ascidiacea, <i>Sphaerodorum gracilis</i> , <i>Psamathe fusca</i> , <i>Modiolus modiolus</i> , <i>Ophiocomina nigra</i> , <i>Limaria hians</i> , <i>Onoba semicostata</i> , <i>Glycera lapidum</i> agg.
Group d	FS1.3	SS.SMx.IMx.Lim	Nematoda spp., <i>Alvania punctura</i> , <i>Onoba semicostata</i> , <i>Pholoe inornata</i> , <i>Nereimyra punctata</i> , <i>Flabelligera affinis</i> , <i>Pherusa flabellata</i> , <i>Thracia villosiuscula</i> , <i>Modiolus modiolus</i> , <i>Psamathe fusca</i>
	FS1.1	SS.SMx.IMx.Lim	Nematoda spp., <i>Pholoe inornata</i> , <i>Hiatella arctica</i> , <i>Nereimyra punctata</i> , <i>Modiolus modiolus</i> , <i>Onoba semicostata</i> , <i>Polycirrus</i> spp., <i>Limaria hians</i> , <i>Sphaerodorum gracilis</i> , <i>Flabelligera affinis</i>
	FS1.5	SS.SMx.IMx.Lim	Nematoda spp., <i>Pholoe inornata</i> , <i>Golfingia</i> spp., <i>Pholoe baltica</i> , <i>Hiatella arctica</i> , <i>Onoba semicostata</i> , <i>Modiolus modiolus</i> , <i>Ophiocomina nigra</i> , <i>Pherusa plumosa</i> , <i>Flabelligera affinis</i>
	FS3.3	SS.SMx.IMx.Lim	Nematoda spp., <i>Modiolus modiolus</i> , <i>Pholoe inornata</i> , <i>Nucula nucleus</i> , <i>Polycirrus</i> spp., <i>Balanus balanus</i> , <i>Spirobranchus triqueter</i> , <i>Aonides oxycephala</i> , <i>Ophiocomina nigra</i> , <i>Gouldia minima</i>
Group e	FS5.3	SS.SMx.IMx.Lim	Nematoda spp., <i>Verruca stroemia</i> , <i>Balanus balanus</i> , <i>Hiatella arctica</i> , <i>Modiolus modiolus</i> , <i>Golfingia (Golfingia) vulgaris vulgaris</i> , <i>Nucula nucleus</i> , <i>Pholoe inornata</i> , <i>Spirobranchus triqueter</i> , <i>Sphaerodorum gracilis</i>
	FS5.4	SS.SMx.IMx.Lim	Nematoda spp., <i>Balanus balanus</i> , <i>Verruca stroemia</i> , <i>Onoba semicostata</i> , <i>Pherusa plumosa</i> , <i>Modiolus modiolus</i> , <i>Nereimyra punctata</i> , <i>Polycirrus</i> spp., <i>Golfingia (Golfingia) vulgaris vulgaris</i> , <i>Pholoe baltica</i>
	FS5.5	SS.SMx.IMx.Lim	<i>Balanus balanus</i> , Nematoda spp., <i>Ophiocomina nigra</i> , <i>Hiatella arctica</i> , <i>Onoba semicostata</i> , <i>Flabelligera affinis</i> , <i>Modiolus modiolus</i> , <i>Golfingia (Golfingia) vulgaris vulgaris</i> , <i>Pholoe inornata</i> , <i>Verruca stroemia</i>
	FS5.6	SS.SMx.IMx.Lim	<i>Balanus balanus</i> , Nematoda spp., <i>Onoba semicostata</i> , <i>Ophiocomina nigra</i> , <i>Pholoe inornata</i> , <i>Verruca stroemia</i> , <i>Hiatella arctica</i> , <i>Pherusa plumosa</i> , <i>Nucula nucleus</i> , <i>Nephasoma (Nephasoma) minutum</i>

Group	Sample	Biotope	Dominant Taxa
	FS4.6	SS.SMx.IMx ?	<i>Photis longicaudata</i> , <i>Mya truncata</i> , <i>Thracia villosiuscula</i> , <i>Pseudopolydora</i> sp., <i>Moerella donacina</i> , <i>Dosinia</i> spp. (juvenile), <i>Gouldia minima</i> , <i>Aequipecten opercularis</i> , <i>Glycera lapidum</i> agg., Sabellinae (<i>Dialychone</i> sp.)
	FS6.2	SS.SMx.IMx ?	<i>Gouldia minima</i> , <i>Spirobranchus triqueter</i> , <i>Dosinia</i> spp. (juvenile), <i>Photis longicaudata</i> , <i>Moerella donacina</i> , <i>Thracia villosiuscula</i> , <i>Glycera lapidum</i> agg., <i>Nereiphylla rubiginosa</i> , <i>Myrianida</i> sp., <i>Chaetozone</i> sp.
Group f	FS6.3	SS.SMx.IMx ?	<i>Spirobranchus triqueter</i> , <i>Gouldia minima</i> , <i>Nereiphylla rubiginosa</i> , <i>Verruca stroemia</i> , <i>Pholoe inornata</i> , <i>Cirratulus cirratus</i> , <i>Dipolydora coeca</i> agg., <i>Lysianassa plumosa</i> , <i>Thracia villosiuscula</i> , <i>Leptochiton asellus</i>
	FS6.4	SS.SMx.IMx ?	<i>Spirobranchus triqueter</i> , <i>Spirobranchus lamarcki</i> , <i>Gouldia minima</i> , <i>Thracia villosiuscula</i> , <i>Phoronis</i> spp., <i>Spirobranchus</i> spp., <i>Pseudopolydora paucibranchiata</i> cf., <i>Cirolana cranchi</i> , <i>Dosinia</i> spp. (juvenile), <i>Pholoe inornata</i>
	FS6.5	SS.SMx.IMx ?	<i>Gouldia minima</i> , <i>Photis longicaudata</i> , <i>Thracia villosiuscula</i> , <i>Cerianthus lloydii</i> , <i>Amphipholis squamata</i> , <i>Thyasira flexuosa</i> , <i>Grania</i> sp., Sabellinae (<i>Dialychone</i> sp.), <i>Spirobranchus triqueter</i> , <i>Aonides paucibranchiata</i>

5. WYRE SOUND MAERL BED CORE SAMPLING

5.1 Primary and derived biological parameters

The biological parameters recorded from diver cores taken in maerl beds in the Wyre Sound and off Tingwall (Table 14) tended to be quite variable but generally exhibited moderate to high levels of species richness and diversity. Multiple core samples were collected per station which was not the case for the grab samples. Numbers of species ranged from 28 taxa at TW1B to 86 taxa at WYS11B with lower numbers of taxa recorded at the station off Tingwall (TW1) which had 28 to 35 taxa. Stations in Wyre Sound generally had over 50 taxa per core. A similar pattern was evident with regard to abundance which ranged from 70 (TW1A) to 510 individuals (WYS11B) with the Tingwall samples exhibiting lower abundances. Pielou's evenness values were moderate to high ranging from 0.67 (WY10B and D) to 0.91 (TW1B) with slightly lower values recorded at station WYS10 whilst Shannon's diversity were generally quite high (>4) and ranged from 3.45 (WYS10B) to 4.8 (WYS12C) with stations WYS11 and WYS12 generally having slightly higher diversity values.

Table 14. Primary and derived biological parameters at Wyre Sound.

Station	Number of Species	Total Abundance (A)	Margalef's d	Pielou's Evenness J	Shannon's Diversity H'
TW1_A	29	70	6.36	0.87	4.17
TW1_B	28	72	6.08	0.91	4.33
TW1_C	35	114	6.97	0.87	4.41
TW1_D	29	84	6.32	0.86	4.19
WYS10_A	54	398	8.35	0.70	3.96
WYS10_B	36	161	6.69	0.67	3.45
WYS10_C	71	423	11.08	0.74	4.52
WYS10_D	70	445	11.15	0.67	4.11
WYS11_A	53	315	8.17	0.80	4.47
WYS11_B	86	510	12.67	0.75	4.75
WYS11_C	60	398	9.19	0.76	4.41
WYS11_D	64	296	9.84	0.81	4.72
WYS12_A	43	176	7.54	0.82	4.39
WYS12_B	61	439	9.20	0.80	4.67
WYS12_C	53	240	8.94	0.85	4.80
WYS12_D	43	115	8.01	0.89	4.68

5.2 Species Composition

A wide variety of taxa were recorded from the maerl bed dive cores at Wyre Sound with 270 taxa recorded in total (Annex 11). The most dominant taxa are provided in Table 15 which shows those taxa which account for 70% of the total abundance. The most dominant taxa included a range of crustacea (predominantly amphipods and isopods) along with a variety of molluscs, echinoderms and polychaetes. Taxa such as *Leptochiton cancellatus*, *Modiolus modiolus*, Nematoda spp., *Amphipholis squamata*, *Socarnes erythrophthalmus*, *Vaunthompsonia cristata*, *Uromunna petiti*, *Animoceradocus semiserratus* and *Caprella acanthifera* accounted for around 50% of the total abundance and were recorded at the majority of stations. Aside from maerl fragments which were recorded in all samples, the most widespread taxa was *Caprella acanthifera* which was recorded in all samples along with Nematoda spp., *Onoba semicostata*, Nemertea spp., *Modiolus modiolus* and *Amphipholis squamata* which were recorded in over 80% of the samples.

Large quantities of live maerl were recorded in the cores, particularly within the Wyre Sound samples. The maximum length of live maerl fragments (>5 mm) from this survey (and maerl samples from Arran and Loch Fyne) are recorded in Annex 14.

Table 15. Dominant taxa (by abundance) recorded at the Wyre Sound survey stations.

Taxa (All Wyre Sites)	Total Abundance	Mean Abundance	Cumulative % Abundance	No. of Samples	% of Samples
<i>Leptochiton cancellatus</i>	477	29.81	11.21	8	50
<i>Modiolus modiolus</i>	397	24.81	20.54	13	81
Nematoda spp.	321	20.06	28.08	14	88
<i>Amphipholis squamata</i>	205	12.81	32.89	13	81
<i>Socarnes erythrophthalmus</i>	187	11.69	37.29	8	50
<i>Vaunthompsonia cristata</i>	150	9.38	40.81	12	75
<i>Uromunna petiti</i>	144	9.00	44.20	11	69
<i>Animoceradocus semiserratus</i>	131	8.19	47.27	10	63
<i>Caprella acanthifera</i>	109	6.81	49.84	16	100
<i>Onoba semicostata</i>	93	5.81	52.02	14	88
<i>Golfingia vulgaris vulgaris</i>	93	5.81	54.21	8	50
<i>Urothoe elegans</i>	91	5.69	56.34	7	44
<i>Grania</i> spp.	89	5.56	58.44	10	63
<i>Leptocheirus pectinatus</i>	84	5.25	60.41	12	75
<i>Rissoa parva</i>	64	4.00	61.91	10	63
<i>Cymodoce truncata</i>	62	3.88	63.37	9	56
<i>Tubificoides benedii</i>	60	3.75	64.78	4	25
<i>Onoba aculeus</i>	59	3.69	66.17	9	56
<i>Othomaera othonis</i>	49	3.06	67.32	10	63
<i>Gibbula cineraria</i>	49	3.06	68.47	9	56
<i>Crenella decussata</i>	46	2.88	69.55	8	50
<i>Hiatella arctica</i>	43	2.69	70.56	12	75

5.3 Multivariate Analysis

The results of cluster analysis and nMDS on the Wyre Sound and Tingwall maerl bed diver core samples are provided in Figure 20. Similarities between samples range from around 20% to just below 60% and the SIMPROF routine identified five groups of samples as highlighted in Figure 17 although this included two groups each containing a single sample. The results of SIMPER analysis on the cluster groups derived from SIMPROF which highlights characteristic taxa are provided in Annex 12 whilst a summary of the groups with the top 10 most abundant taxa for each sample and biotope type is provided in Table 16.

Group a includes all the Tingwall samples which were separated from the remaining samples at around 20% similarity. These samples were characterised by the oligochaete *Tubificoides benedii* along with moderate numbers of other taxa including *Caprella acanthifera*, *Othomaera othonis*, *Amphipholis squamata*, *Nemertea* spp., *Phtisica marina*, *Pusillina sarsii*, *Modiolus modiolus*, *Hiatella arctica*, *Onoba semicostata* and *Flabelligera affinis*. Group b includes all the samples from station WYS12 in Wyre sound which were characterised by amphipod, cumacean and caprellid crustacea namely *Urothoe elegans*, *Vaunthompsonia cristata* and *Caprella acanthifera*. A variety of other taxa characterise this group, including *Rissoa parva*, *Prionospio* spp., *Leptocheirus pectinatus*, *Gibbula cineraria*, *Onoba semicostata*, *Socarnes erythrophthalmus*, *Nematoda* spp., *Amphiuridae* spp. (juvenile), *Animoceradocus semiserratus*, *Nemertea* spp. and *Philine* spp.

Groups c, d and e were broadly similar and separated at around 40% similarity and contained all the samples from stations WYS10 and WYS11 with groups c and d each comprising a single sample (WYS10_B and WYS11_C respectively). Group c (WYS10_B) was characterised by species such as *Leptochiton cancellatus*, *Nematoda* spp., *Animoceradocus semiserratus* and juvenile *M. modiolus* whilst group d (WYS11_C) was

characterised by juvenile *M. modiolus* along with *Uromunna petiti*, *Leptocheirus hirsutimanus*, *Othomaera othonis* and *Amphipholis squamata*. Group e includes the remaining samples from stations WYS10 and WYS11 which were dominated by high numbers of juvenile/immature *M. modiolus* along with Nematoda spp., *Leptochiton cancellatus*, *Golfingia (Golfingia) vulgaris vulgaris*, *A. squamata*, *Grania* spp., *A. semiserratus*, *Leptocheirus pectinatus*, *Uromunna petiti*, *Sphaerodorum gracilis*, *Cymodoce truncata* and *Polygordius* spp.

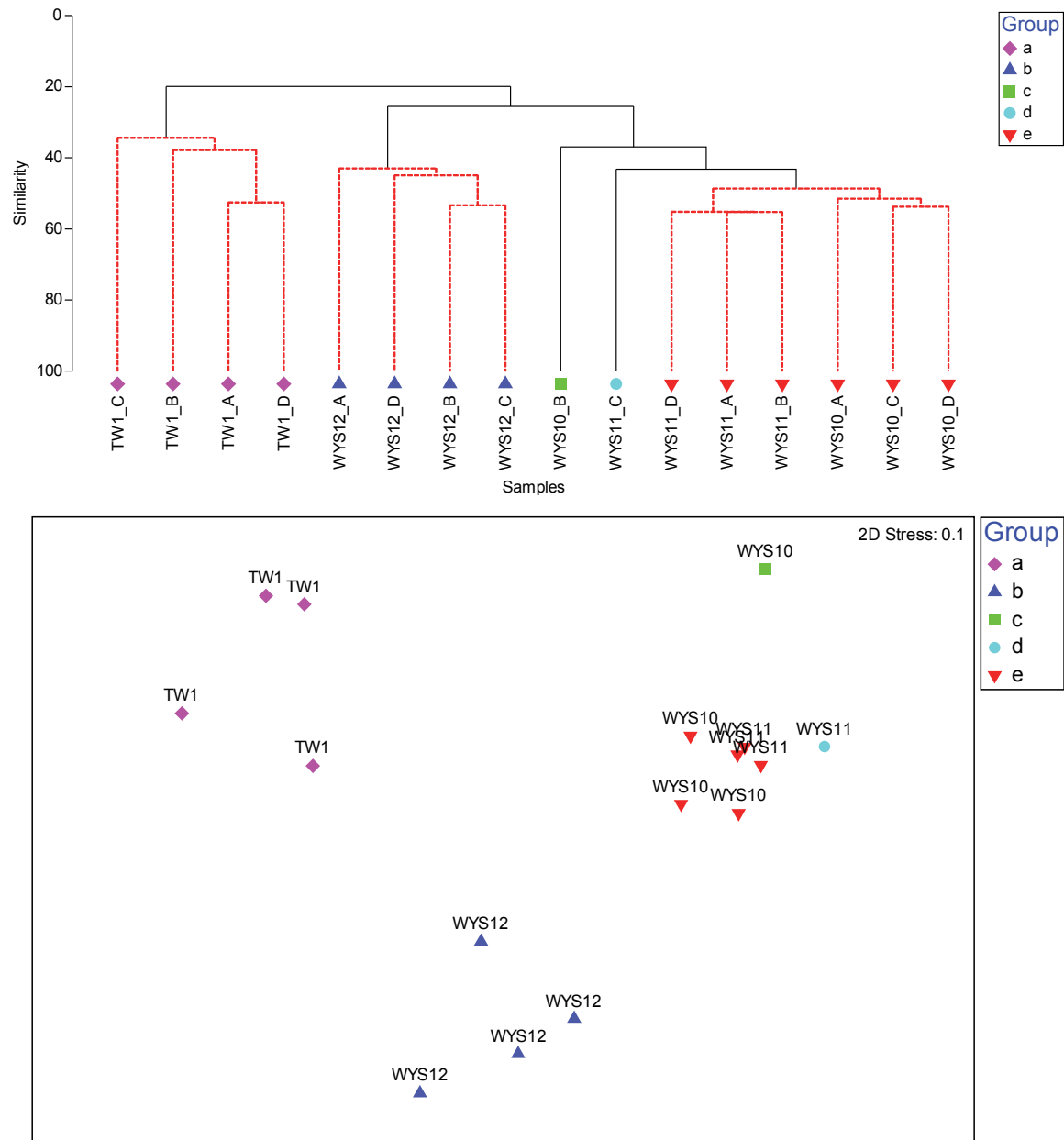


Figure 20. Results of cluster analysis and nMDS for the Wyre Sound maerl samples.

The groups defined from cluster analysis have been tabulated with biotope and dominant taxa in Table 16 and Figure 17. Given the high quantity of live maerl at these stations they have all been assigned **SS.SMp.Mrl** (Maerl beds). The different infaunal assemblages recorded during survey and illustrated above presumably reflect differences in environmental conditions and these communities may also include different maerl species and/or biotopes but information from video or diver observations would be required to confirm this.

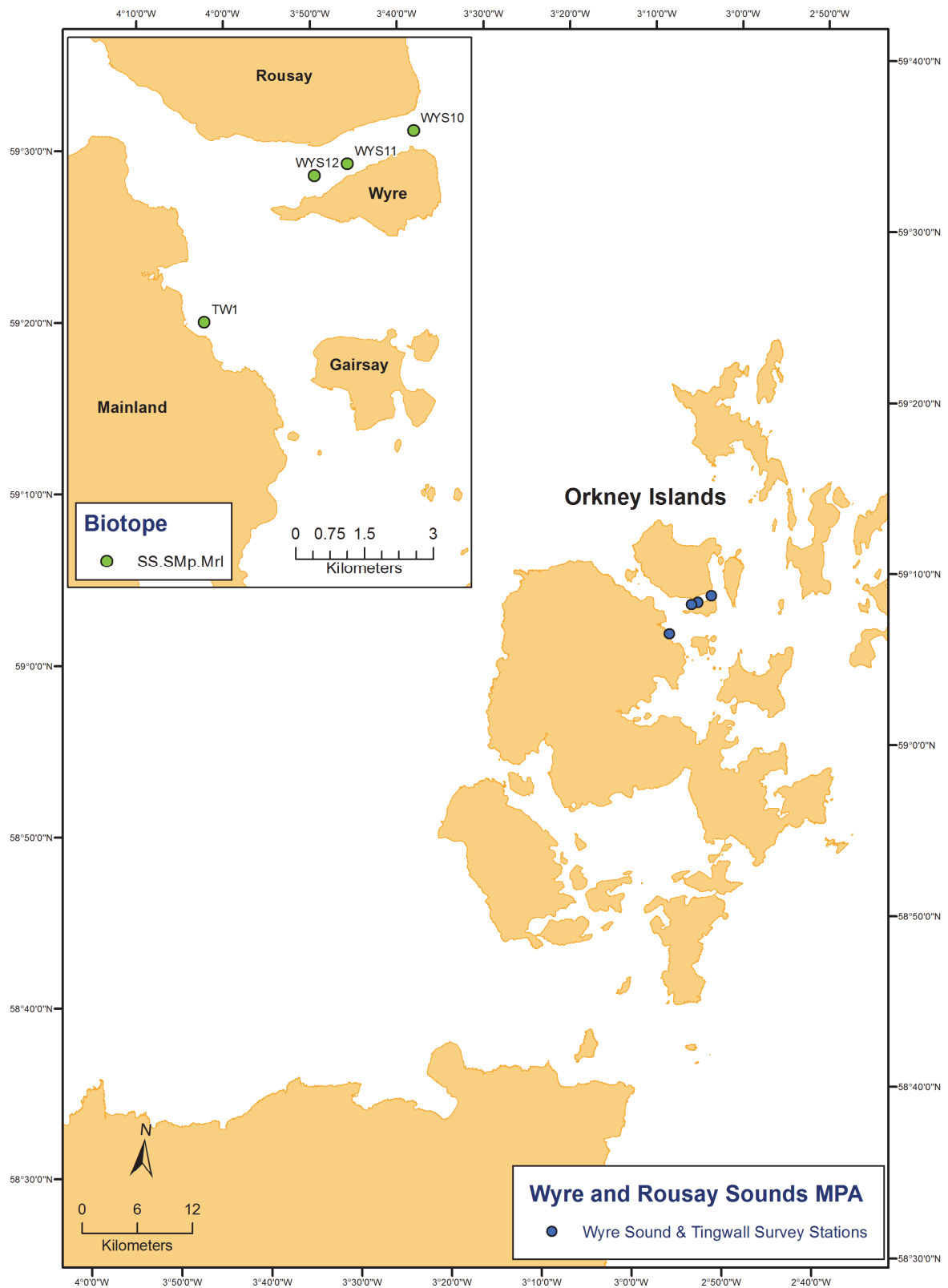


Figure 17. Biotopes at the Wyre Sound & Tingwall survey stations. Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2016. All rights reserved. Ordnance Survey Licence number 100017908.

Table 16. Biotopes, and dominant taxa within cluster groups for the Wyre Sound maerl samples.

Group	Sample	Biotope	Dominant Taxa
Group a	TW1_A	SS.SMp.Mrl	<i>Tubificoides benedii</i> , <i>Caprella acanthifera</i> , <i>Amphipholis squamata</i> , <i>Capitella</i> spp., <i>Microdeutopus</i> spp., <i>Modiolus modiolus</i> , <i>Onoba semicostata</i> , <i>Pusillina sarsii</i> , <i>Flabelligera affinis</i> , <i>Dexamine thea</i>
	TW1_B	SS.SMp.Mrl	<i>Ophiuroidea</i> spp. (juvenile), <i>Modiolus modiolus</i> , <i>Onoba semicostata</i> , <i>Tubificoides benedii</i> , <i>Caprella acanthifera</i> , <i>Anomia ephippium</i> , <i>Aplysia punctata</i> , <i>Urothoe elegans</i> , <i>Pusillina sarsii</i> , <i>Phtisica marina</i>
	TW1_C	SS.SMp.Mrl	<i>Tubificoides benedii</i> , <i>Amphipholis squamata</i> , <i>Hiatella arctica</i> , <i>Microprotopus maculatus</i> , <i>Phoronis</i> spp., <i>Rissoa parva</i> , <i>Othomaera othonis</i> , <i>Owenia fusiformis</i> , <i>Cheirocratus sundevalli</i> , <i>Ophiopholis aculeata</i>
	TW1_D	SS.SMp.Mrl	<i>Tubificoides benedii</i> , <i>Flabelligera affinis</i> , <i>Amphipholis squamata</i> , <i>Hiatella arctica</i> , <i>Capitella</i> spp., <i>Cirripedia</i> spp., <i>Onoba aculeus</i> , <i>Othomaera othonis</i> , <i>Pusillina sarsii</i> , <i>Sphaerodorum gracilis</i>
Group b	WYS12_A	SS.SMp.Mrl	<i>Vaunthompsonia cristata</i> , <i>Urothoe elegans</i> , <i>Socarnes erythrophthalmus</i> , <i>Amphipholis squamata</i> , <i>Caprella acanthifera</i> , <i>Grania</i> spp., <i>Mediomastus fragilis</i> , <i>Sarsinebalia typhlops</i> , <i>Rissoa parva</i> , <i>Ophiopholis aculeata</i>
	WYS12_B	SS.SMp.Mrl	<i>Socarnes erythrophthalmus</i> , <i>Caprella acanthifera</i> , <i>Vaunthompsonia cristata</i> , <i>Onoba aculeus</i> , <i>Urothoe elegans</i> , <i>Animoceradocus semiserratus</i> , <i>Amphiuridae</i> spp. (juvenile), <i>Gibbula cineraria</i> , <i>Leptocheirus pectinatus</i> , <i>Rissoa parva</i>
	WYS12_C	SS.SMp.Mrl	<i>Vaunthompsonia cristata</i> , <i>Urothoe elegans</i> , <i>Caprella acanthifera</i> , <i>Gibbula cineraria</i> , <i>Leptocheirus pectinatus</i> , <i>Onoba semicostata</i> , <i>Amphiuridae</i> spp. (juvenile), <i>Socarnes filicornis</i> , <i>Mytilidae</i> spp. (juvenile), <i>Nemertea</i> spp.
	WYS12_D	SS.SMp.Mrl	<i>Urothoe elegans</i> , <i>Socarnes erythrophthalmus</i> , <i>Amphiuridae</i> spp. (juvenile), <i>Nebalia</i> spp., <i>Prionospio</i> spp., <i>Leptocheirus pectinatus</i> , <i>Urothoe marina</i> , <i>Scolecopsis fuliginosa</i> , <i>Caprella acanthifera</i> , <i>Mytilidae</i> spp. (juvenile)
Group c	WYS10_B	SS.SMp.Mrl	<i>Leptochiton cancellatus</i> , <i>Nematoda</i> spp., <i>Animoceradocus semiserratus</i> , <i>Modiolus modiolus</i> , <i>Cymodoce truncata</i> , <i>Grania</i> spp., <i>Amphipholis squamata</i> , <i>Leptocheirus pectinatus</i> , <i>Crenella decussata</i> , <i>Pholoe inornata</i>

Group	Sample	Biotope	Dominant Taxa
Group d	WYS11_C	SS.SMp.Mrl	<i>Modiolus modiolus</i> , <i>Uromunna petiti</i> , <i>Leptocheirus hirsutimanus</i> , <i>Othomaera othonis</i> , <i>Amphipholis squamata</i> , Nematoda spp., <i>Cymodoce truncata</i> , <i>Dikoleps cutleriana</i> , <i>Vaunthompsonia cristata</i> , <i>Ophiocomina nigra</i>
	WYS10_A	SS.SMp.Mrl	<i>Leptochiton cancellatus</i> , <i>Modiolus modiolus</i> , <i>Onoba semicostata</i> , Nematoda spp., <i>Golfingia (Golfingia) vulgaris vulgaris</i> , Ophiuroidea spp. (juvenile), <i>Animoceradocus semiserratus</i> , <i>Grania</i> spp., <i>Eupolymnia nesidensis</i> , <i>Pusillina sarsii</i>
	WYS10_C	SS.SMp.Mrl	Nematoda spp., <i>Leptochiton cancellatus</i> , <i>Modiolus modiolus</i> , <i>Amphipholis squamata</i> , <i>Socarnes erythrophthalmus</i> , <i>Golfingia (Golfingia) vulgaris vulgaris</i> , <i>Grania</i> spp., <i>Onoba semicostata</i> , <i>Rissoa parva</i> , <i>Leptocheirus pectinatus</i>
	WYS10_D	SS.SMp.Mrl	<i>Leptochiton cancellatus</i> , <i>Amphipholis squamata</i> , <i>Modiolus modiolus</i> , <i>Uromunna petiti</i> , <i>Rissoa parva</i> , <i>Lysianassa ceratina</i> , Nematoda spp., <i>Animoceradocus semiserratus</i> , <i>Vaunthompsonia cristata</i> , <i>Ophiopholis aculeata</i>
Group e	WYS11_A	SS.SMp.Mrl	<i>Modiolus modiolus</i> , Nematoda spp., <i>Socarnes erythrophthalmus</i> , <i>Grania</i> spp., <i>Animoceradocus semiserratus</i> , <i>Golfingia (Golfingia) vulgaris vulgaris</i> , <i>Amphipholis squamata</i> , <i>Trypanosyllis (Trypanosyllis) coeliaca</i> , <i>Crenella decussata</i> , <i>Leptochiton cancellatus</i>
	WYS11_B	SS.SMp.Mrl	<i>Modiolus modiolus</i> , Nematoda spp., <i>Socarnes erythrophthalmus</i> , <i>Amphipholis squamata</i> , <i>Animoceradocus semiserratus</i> , <i>Uromunna petiti</i> , <i>Golfingia (Golfingia) vulgaris vulgaris</i> , <i>Cymodoce truncata</i> , <i>Vaunthompsonia cristata</i> , <i>Crenella decussata</i>
	WYS11_D	SS.SMp.Mrl	<i>Uromunna petiti</i> , Nematoda spp., <i>Modiolus modiolus</i> , <i>Animoceradocus semiserratus</i> , <i>Golfingia (Golfingia) vulgaris vulgaris</i> , <i>Leptocheirus pectinatus</i> , <i>Amphipholis squamata</i> , <i>Notoproctus</i> spp., <i>Dikoleps cutleriana</i> , <i>Grania</i> spp.

6. DISCUSSION

The sampling stations surveyed in the Clyde Sea area in 2015 covered a range of habitats off Arran and in Loch Fyne, including gravelly sands, gravelly sandy muds/muddy sands or cleaner sands. A large number of taxa were recorded from the survey with 438 taxa identified off Arran and 279 taxa recorded in Loch Fyne. Polychaetes, ophiuroid echinoderms (brittlestars) and bivalves were most characteristic off Arran with taxa such as nematode worms, *Abra alba*, *Owenia fusiformis*, juvenile Amphiuroidae spp., *Gouldia minima*, *Galathowenia oculata* and *Mediomastus fragilis* particularly abundant. In Loch Fyne, five grab samples and 11 diver core samples included *Limaria hians*, a habitat-forming species and protected feature in the Upper Loch Fyne and Loch Goil NC MPA. Other key taxa included *Nereimyra punctata*, Nematoda, *Spirobranchus triqueter*, *Ophiothrix fragilis*, *Onoba semicostata*, *Ophiocomina nigra*, *Pholoe inornata*, *Modiolus modiolus*, *Gouldia minima* and *Sphaerodorium gracilis*. Live maerl was also recorded at a number of the grab sites off Arran and in Loch Fyne albeit in low densities and five stations off Arran included the species *Arctica islandica* (ocean quahog), a protected feature of the South Arran NC MPA.

Multivariate analysis indicated significant variability across the survey area with a large number of discrete groups derived. However, many of these groups comprised few stations and could be loosely aggregated into broader groups with similar environmental conditions which could be correlated to biotope complexes. An assessment of the main communities in relation to the UK biotope classification (Connor *et al.*, 2004) indicated the presence of a number of biotopes, although as in previous surveys in the Clyde Sea area biotopes were often rather poorly defined or included intermediate forms. Analysis of video footage in these locations would allow biotope assignment at a finer resolution. For example, sites that have been assigned circalittoral fine mud are likely to include examples burrowing megafauna or possibly seapens and burrowing megafauna in circalittoral fine mud. Characterisation of such biotopes from grab samples is problematic given that the technique typically under samples larger taxa (e.g. seapens and other megafauna), which may otherwise be revealed by video surveys.

Off Arran the variable slightly muddy sandy gravels included muddier and cleaner variants of shallow infralittoral mixed or coarse sediment biotopes with the gravel fraction often comprising of dead maerl fragments with low densities of live maerl. The live maerl recorded in the grab sample residues off Arran and in Loch Fyne were not present in sufficient densities to be classified as a maerl biotope. Video data would be required to determine the presence and distribution of maerl biotopes in relevant parts of the MPAs.

Typical biotopes off Arran included somewhat poorly defined examples of **SS.SCS.ICS** (Infralittoral coarse sediment) and **SS.SMx.IMx** (Infralittoral mixed sediment) which exhibited some resemblance to coarse gravel or sand biotopes such as **SS.SCS.CCS.MedLumVen** (*Mediomastus fragilis*, *Lumbrineris* spp. and venerid bivalves in circalittoral coarse sand or gravel) and **SS.SCS.ICS.MoeVen** (*Moerella* spp. with venerid bivalves in infralittoral gravelly sand). **SS.SCS.ICS.MoeVen** is a Priority Marine Feature (PMF) in Scottish waters (see Tyler-Walters *et al.*, 2016) and it is possible that habitats classified as **SS.SCS.ICS** here are shallow, slightly silty, maerl influenced variants of these biotopes. Coarse mixed sediment communities is an area of the biotope classification which (along with offshore biotopes) is currently less well defined and subject to an ongoing review by JNCC. As such, examples of these coarse sediment habitats within the Clyde Sea area are likely to be under-reported and would benefit from additional data to improve the knowledge-base of such communities in this region.

Other biotopes off Arran included **SS.SMx.CMx** (Circalittoral mixed sediment) and rather variable forms of sandy mud biotopes such as **SS.SMu.CSaMu.AfilMysAnit** (*Amphiura filiformis*, *Mysella bidentata* and *Abra nitida* in circalittoral sandy mud) whilst deeper muddy

habitats were classified as **SS.SMu.CSaMu** (Circalittoral sandy mud) or **SS.SMu.CFiMu** (Circalittoral fine mud) with the latter including occasional stations with specimens of burrowing megafaunal crustacea such as *Nephrops norvegicus*. Muddy habitats in upper Loch Fyne were also classified as **SS.SMu.CFiMu** (although burrowing megafauna were less evident) and similar rather impoverished habitats were recorded offshore from Arran and in Loch Goil in the 2012 and 2013 Clyde Sea surveys (Allen, 2013; 2014 and Moore, 2013). Given that some of these deeper muddy stations (particularly off Arran) included occasional examples of burrowing megafauna it is likely that such areas may include burrowed mud biotopes such as **SS.SMu.CFiMu.SpM** (Seapens and burrowing megafauna in circalittoral fine mud) or **SS.SMu.CFiMu.MegMax** (Burrowing megafauna and *Maxmuelleria lankesteri* in circalittoral mud) although video data would be required to confirm this. Similar habitats from the 2012 Clyde Sea survey were classified as **SS.SMu.CFiMu.SpM** or in some cases **SS.SMu.CFiMu.MegMax** from video data collected at the same locations (Moore & Atkinson, 2012). It is likely that grab sampling will underestimate species richness in such areas particularly where stations lack replication, although burrowing megafaunal communities with relatively impoverished infauna have also been recorded previously in the Clyde area (Allen, 2013). The muddier habitats recorded off Arran and in Loch Fyne tended to be less diverse or in some cases rather impoverished but it is uncertain whether this is indicative of moderate disturbance relating to natural or anthropogenic factors such as physical disturbance or variation in water quality. Biotopes recorded in Loch Fyne included very diverse communities in mixed sediments with flame shell beds - **SS.SMx.IMx.Lim** (*Limaria hians* beds in tide-swept sublittoral muddy mixed sediment). Other biotopes in Loch Fyne included those characteristic of mixed sediment with abundant brittlestar communities such as **SS.SMx.CMx.OphMx** (*Ophiothrix fragilis* and/or *Ophiocomina nigra* brittlestar beds on sublittoral mixed sediment).

Diver cores in the vicinity of the *Limaria* beds at Otter Spit in Loch Fyne exhibited a varied but often very diverse community with highest diversities recorded in samples with moderate densities of *Limaria* (**SS.SMx.IMx.Lim** biotopes). These communities were broadly similar to the grab samples in Loch Fyne containing *Limaria* located approximately 500m offshore from the diver transects although a wider range of taxa were often recorded in the grab samples which reflects the larger sample size. Characteristic taxa in the diver samples which contained *Limaria* included Nematoda spp., *Balanus balanus*, *O. nigra*, *Onoba semicostata*, *Pholoe inornata*, *Verruca stroemia*, juvenile/immature *M. modiolus*, *Alvania punctura* and *Thracia villosiuscula*. Moderately high densities of *Modiolus* were often recorded in these samples although the specimens recorded during the grab and diver core surveys were predominantly juveniles or small/immature forms. As such these communities were not deemed to form *Modiolus* biotopes and accompanying diver observations also indicate that these areas represent *Limaria* biotopes rather than *Modiolus* beds.

It is uncertain at present whether samples with high numbers of juvenile *Modiolus* represent short term increases following recruitment or if they will develop into more mature populations and compete with *Limaria*. Previous surveys in Loch Alsh and Loch Fyne (Moore *et al.* 2013) have highlighted areas where *Modiolus* and *Limaria* biotopes are in close proximity or interspersed/overlap with potential competition for spaces/resources between the two species. This does not appear to be the case based on the samples analysed here with predominantly juvenile *Modiolus* but further clarification of this may be gained from analysis of the video data or in future surveys. Most transects from the diver core survey included some samples which lacked *Limaria* (highlighting the inherent patchiness of the biotope) but notably from transect FS4. These samples tended to include biotopes such as **SS.SMx.IMx** (Infralittoral mixed sediment) whilst those dominated by brittlestars (notably *Ophiocomina nigra*) were classified as **SS.SMx.CMx.OphMx** (*Ophiothrix fragilis* and/or *Ophiocomina nigra* brittlestar beds on sublittoral mixed sediment).

Diver cores in Wyre Sound and off Tingwall in waters around the Orkney Islands were characterised by maerl beds (**SS.SMp.Mrl**) with high frequencies of live maerl along with a diverse species assemblage characterised by a range of amphipod and isopod crustacea along with a variety of molluscs, echinoderms and polychaetes. Typical taxa include species such as *Leptochiton cancellatus*, *M. modiolus*, Nematoda spp., *Amphipholis squamata*, *Socarnes erythrophthalmus*, *Vaunthompsonia cristata*, *Uromunna petiti*, *Animoceradocus semiserratus* and *Caprella acanthifera*. Such taxa are typical for these habitats and a number of polychaete and amphipod species have a high specificity to maerl beds (BIOMAERL team, 1999) including amphipod taxa such as *A. semiserratus* which was commonly recorded in Wyre Sound along with a variety of other amphipods, cumaceans, polychaetes and bivalves.

Maerl beds are often highly diverse which reflects their complex structure and the relatively high levels of diversity (up to 86 taxa per core) recorded here are not uncommon in maerl habitats which often exhibit increased diversity in relation to adjacent areas (Lancaster *et al.*, 2014; Birkett *et al.*, 1998). Maerl beds are a protected feature of the Wyre and Rousay Sounds NC MPA and the results from the present study illustrate the high diversity associated with maerl beds in the MPA and surrounding area. A number of separate communities were recorded within the maerl beds with differences most evident between those off Tingwall and those in Wyre Sound which may reflect differences in habitat/sediment type or other environmental factors. Information from video or diver observations would be required to confirm the presence of specific maerl biotopes.

Overall the results from the 2015 Clyde Sea survey highlighted a diverse range of communities and included some especially diverse benthic communities particularly in areas of coarse/mixed sediment and specific features of conservation interest such as flame shell beds. The findings of the current survey confirm the presence of a number of biotope complexes recorded in Loch Fyne and inshore around Arran which broadly agree with those recorded previously (Allen, 2013; 2014 and Moore, 2013) and as in previous surveys highlights a range of rather intermediate forms of mixed sediment and shallow coarse sediment biotopes which often exhibit high levels of diversity. A number of additional records of flame shell beds (**SS.SMx.IMx.Lim**) were recorded in this survey including several grab samples located just outside (to the south-east) of the *Limaria* bed boundaries derived from the 2012 surveys. Drop down video data from this area is yet to be published and these records may help further define the extent of the bed. Additional information on the size distribution of *Limaria* and more detailed community assessment by diver core sampling was also undertaken within the Otter Narrows flame shell bed within Upper Loch Fyne which represents the most southerly significant example of this seabed habitat in Scotland and the third largest known bed in Scotland (Moore *et al.*, 2013). The diver cores collected within the flame shell beds here were often highly diverse in comparison to adjacent habitats highlighting their importance from a biodiversity perspective which reflects the increased structural complexity of such habitats.

Other features of interest during the current survey include records of **SS.SMu.CFiMu** (Circalittoral fine mud) which were recorded in Loch Fyne and off Arran as such habitats are likely to include examples of the burrowed mud protected feature of the MPAs although video data would be required to confirm this. The somewhat muddy examples of infralittoral coarse sediments (**SS.SCS.ICS**) recorded off Arran may represent muddier, intermediate variants of biotopes belonging to the Shallow tide-swept coarse sands with burrowing bivalves protected feature of the MPA.

Overall the findings of the current study improve the resolution of data and increase our understanding of the extent and distribution of seabed habitats in these MPAs. In addition, the data presented here can provide baseline information such as *Limaria*/maerl size distribution, which could be used to inform future management of these areas in the context of the Scottish MPA Programme.

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ANNEX 1: SAMPLING DETAILS FROM THE 2015 SURVEYS

South Arran and Loch Fyne benthic survey							
Station	Station ID	Area	Date	Time	Latitude	Longitude	Depth (m CD)
D1G1	D1-G1#3	Arran	15/07/2015	14:36	55.503500	-5.048467	48.7
D1G2	D1-G2#2	Arran	15/07/2015	14:49	55.504650	-5.053667	43.2
D1G4	D1-G4	Arran	15/07/2015	15:12	55.501167	-5.067750	27.8
D1G5	D1-G5	Arran	15/07/2015	15:20	55.505283	-5.064767	16.1
D1G6	D1-G6#1	Arran	15/07/2015	15:29	55.508000	-5.055083	35.2
D1G7	D1-G7	Arran	15/07/2015	15:39	55.511250	-5.060333	9.3
D1G8	D1-G8	Arran	15/07/2015	15:46	55.508850	-5.063367	10.4
D1G9	D1-G9	Arran	15/07/2015	15:59	55.508983	-5.071350	30.2
D1G10	D1-G10#3	Arran	15/07/2015	16:13	55.509750	-5.071833	29.7
D3G1	D3-G1#2	Arran	19/07/2015	13:02	55.607650	-5.114083	42.3
D3G2	D3-G2#3	Arran	19/07/2015	13:26	55.604450	-5.120400	22.2
D3G3	D3-G3#2	Arran	19/07/2015	13:36	55.611967	-5.116733	43.1
D3G4	D3-G4	Arran	19/07/2015	14:16	55.623183	-5.128383	16.0
D3G5	D3-G5	Arran	19/07/2015	14:31	55.625033	-5.124333	40.0
D3G6	D3-G6	Arran	19/07/2015	14:40	55.627583	-5.132050	4.0
D3G7	D3-G7	Arran	19/07/2015	14:48	55.620367	-5.128800	8.5
D3G8	D3-G8	Arran	19/07/2015	14:59	55.611000	-5.125583	5.3
D3G9	D3-G9#2	Arran	19/07/2015	15:06	55.608033	-5.125267	6.0
D3G10	D3-G10	Arran	19/07/2015	15:15	55.605583	-5.125300	10.4
D5G1	D5-G1#2	Arran	15/07/2015	11:58	55.543433	-5.078050	20.9
D5G2	D5-G2	Arran	15/07/2015	12:12	55.538883	-5.083267	17.9
D5G3	D5-G3#2	Arran	15/07/2015	12:22	55.537700	-5.078183	3.9
D5G4	D5-G4	Arran	15/07/2015	12:32	55.535683	-5.072733	4.9
D5G5	D5-G5	Arran	15/07/2015	12:44	55.533700	-5.066583	26.3
D5G6	D5-G6	Arran	15/07/2015	12:59	55.532633	-5.062700	48.2
D5G7	D5-G7	Arran	15/07/2015	13:13	55.535550	-5.058200	51.3
T1G1	T1-G1	Arran	15/07/2015	08:25	55.578217	-5.078617	80.5
T1G2	T1-G2#2	Arran	15/07/2015	08:44	55.578783	-5.066667	90.6
T1G3	T1-G3	Arran	15/07/2015	09:00	55.576550	-5.072700	83.7
T1G4	T1-G4#2	Arran	15/07/2015	09:20	55.575750	-5.063533	91.9
T1G5	T1-G5	Arran	15/07/2015	09:32	55.574267	-5.067967	90.6
T1G6	T1-G6	Arran	15/07/2015	09:45	55.571583	-5.070017	63.1
T1G7	T1-G7	Arran	15/07/2015	10:10	55.571483	-5.060633	75.3
T1G8	T1-G8#2	Arran	15/07/2015	10:28	55.569117	-5.063067	80.0
T1G9	T1-G9	Arran	15/07/2015	10:40	55.567767	-5.055033	80.9
T1G10	T1-G10	Arran	15/07/2015	10:51	55.565033	-5.066483	69.5
FG03	FG3	Loch Fyne	12/07/2015	10:18	56.011300	-5.369267	9.4
FG04	FG4	Loch Fyne	12/07/2015	10:28	56.010950	-5.367633	10.5
FG05	FG5#2	Loch Fyne	12/07/2015	10:48	56.013450	-5.366433	9.0
FG06	FG6	Loch Fyne	12/07/2015	10:40	56.013133	-5.365400	12.9
FG09	FG9	Loch Fyne	12/07/2015	09:20	56.002400	-5.370783	11.1
FG10	FG10	Loch Fyne	12/07/2015	09:25	56.003733	-5.369450	7.5
FG23	FG23	Loch Fyne	12/07/2015	09:59	56.009467	-5.370450	10.3
FG24	FG24#9	Loch Fyne	12/07/2015	12:13	56.004050	-5.369450	9.7
FG25	FG25#2	Loch Fyne	21/07/2015	14:56	56.001100	-5.374183	10.8
FG26	FG26	Loch Fyne	21/07/2015	14:44	56.008550	-5.369433	12.9
FG27	FG27	Loch Fyne	21/07/2015	15:05	56.002233	-5.371600	10.8
FG28	FG28	Loch Fyne	21/07/2015	14:58	56.001083	-5.374033	10.8
SG02	SG-2	Loch Fyne	22/07/2015	11:44	56.237550	-5.059967	46.9
SG03	SG-3	Loch Fyne	22/07/2015	11:35	56.236900	-5.057117	63.0
SG05	SG-5	Loch Fyne	22/07/2015	11:27	56.237933	-5.050033	37.2
SG08	SG-8	Loch Fyne	22/07/2015	11:54	56.228450	-5.065533	38.9
SG09	SG-9	Loch Fyne	22/07/2015	12:03	56.228250	-5.062517	79.8

Loch Fyne *Limaria* survey

Station	Area	Date	Time	Depth (m CD)	Bearing	Latitude	Longitude	
FS1	Otter Spit	10/08/2015	Start	08:39	6.8	205	56.002090	-5.380900
			End	08:50	7.0			
FS3	Otter Spit	10/08/2015	Start	14:24	9.6	205	56.008320	-5.372130
			End	14:59	9.6			
FS4	Otter Spit	11/08/2015	Start	09:51	7.8	90	56.003860	-5.368850
			End	09:57	10.4			
FS6	Otter Spit	11/08/2015	Start	16:14	9.5	205	56.010140	-5.370340
			End	16:20	9.3			
FS5	Otter Spit	12/08/2015	Start	09:41	10.7	205	56.005930	-5.376250
			End	09:42	10.5			
FSD12	Otter Spit	12/08/2015		11:25	9.2	n/a	56.009050	-5.371610
FSD13	Otter Spit	12/08/2015		11:44	9.6	n/a	56.009520	-5.371220
FSD14	Otter Spit	12/08/2015		12:08	8.7	n/a	56.001820	-5.383240
FSD15#1	Otter Spit	12/08/2015		12:26	9.6	n/a	56.001740	-5.382440
FSD15#2	Otter Spit	12/08/2015		12:31	10.2	n/a	56.001670	-5.382590
FSD11.1	Otter Spit	12/08/2015		16:01	14.8	n/a	56.006930	-5.369050
FSD10.2	Otter Spit	12/08/2015		16:30	12.9	n/a	56.006500	-5.371220
FSD16	Otter Spit	12/08/2015		17:36	7.9	n/a	56.003320	-5.376870

Bearings given for permanent transects. Spot dive station names start FSD.

Wyre Sound and Tingwall Maerl Core Survey

Station	Area	Date	Time	Latitude	Longitude	Depth (m BLS)
WYS11	Wyre Sound	10/06/2015	11:09	59.123500	-2.987300	8.6
WYS12	Wyre Sound	14/06/2015	15:25	59.120633	-2.999417	9.5
WYS10	Wyre Sound	12/06/2015	12:00	59.131083	-2.963283	8.8
TW1	Tingwall	10/06/2015	14:02	59.090100	-3.035950	8.6

ANNEX 2: SEDIMENT PARTICLE SIZE ANALYSES DATA

SAMPLE	PARAMETER	D1-G1	D1-G2	D1-G4	D1-G5	D1-G6
SAMPLE TYPE:		Bimodal, Very Poorly Sorted	Bimodal, Very Poorly Sorted	Trimodal, Very Poorly Sorted	Trimodal, Very Poorly Sorted	Bimodal, Very Poorly Sorted
TEXTURAL GROUP:		Slightly Gravelly Muddy Sand	Slightly Gravelly Muddy Sand	Gravelly Muddy Sand	Gravelly Muddy Sand	Gravelly Muddy Sand
SEDIMENT NAME:		Slightly Very Fine Gravelly Medium Silty Fine Sand	Slightly Very Fine Gravelly Medium Silty Fine Sand	Very Fine Gravelly Medium Silty Fine Sand	Very Fine Gravelly Coarse Silty Very Coarse Sand	Very Fine Gravelly Medium Silty Fine Sand
FOLK AND WARD METHOD (μm)	MEDIAN GRAIN SIZE D_{50} (μm)	169.4	101.9	186.5	271.2	151.4
	MEAN GRAIN SIZE (μm)	92.20	60.77	163.0	218.1	99.4
	SORTING	4.508	4.084	8.519	7.177	5.810
	SKEWNESS	-0.554	-0.491	-0.074	-0.197	-0.235
	KURTOSIS	1.012	0.805	1.103	0.879	1.289
FOLK AND WARD METHOD (ϕ)	MEDIAN GRAIN SIZE D_{50} (ϕ):	2.562	3.295	2.422	1.883	2.723
	MEAN GRAIN SIZE (ϕ):	3.439	4.041	2.617	2.197	3.331
	SORTING	2.173	2.030	3.091	2.843	2.538
	SKEWNESS	0.554	0.491	0.074	0.197	0.235
	KURTOSIS	1.012	0.805	1.103	0.879	1.289
FOLK AND WARD METHOD (Description)	MEAN:	Very Fine Sand	Very Coarse Silt	Fine Sand	Fine Sand	Very Fine Sand
	SORTING:	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted
	SKEWNESS:	Very Fine Skewed	Very Fine Skewed	Symmetrical	Fine Skewed	Fine Skewed
	KURTOSIS:	Mesokurtic	Platykurtic	Mesokurtic	Platykurtic	Leptokurtic
BULK GRAIN SIZE	% GRAVEL:	0.35	0.22	11.97	10.23	6.24
	% SAND:	72.21	63.39	60.73	65.68	65.20
	% MUD:	27.44	36.39	27.30	24.09	28.56
	% V COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% MEDIUM GRAVEL:	0.00	0.00	0.29	0.00	1.40
	% FINE GRAVEL:	0.17	0.07	5.53	2.25	1.88
	% V FINE GRAVEL:	0.18	0.16	6.15	7.98	2.95
	% V COARSE SAND:	0.42	0.15	8.58	18.03	3.19
	% COARSE SAND:	3.31	0.03	5.85	10.16	3.62
	% MEDIUM SAND:	27.16	9.53	14.94	13.15	16.78
	% FINE SAND:	30.13	31.67	20.00	14.06	27.58
	% V FINE SAND:	11.18	22.00	11.36	10.28	14.02
	% V COARSE SILT:	4.59	6.53	5.24	5.84	5.74
	% COARSE SILT:	5.39	8.02	6.33	5.87	6.70
	% MEDIUM SILT:	7.31	9.56	7.07	5.79	7.27
	% FINE SILT:	7.28	8.78	6.29	4.86	6.47
% V FINE SILT:	2.80	3.40	2.31	1.70	2.35	
% CLAY:	0.08	0.11	0.05	0.02	0.03	

SAMPLE	PARAMETER	D1-G7	D1-G8	D1-G9	D1-G10	D3-G1
SAMPLE TYPE:		Unimodal, Poorly Sorted	Polymodal, Very Poorly Sorted	Polymodal, Very Poorly Sorted	Trimodal, Very Poorly Sorted	Bimodal, Very Poorly Sorted
TEXTURAL GROUP:		Sandy Gravel	Muddy Sandy Gravel	Gravelly Muddy Sand	Gravelly Muddy Sand	Slightly Gravelly Muddy Sand
SEDIMENT NAME:		Sandy Very Fine Gravel	Coarse Silty Sandy Medium Gravel	Coarse Gravelly Medium Silty Fine Sand	Very Fine Gravelly Very Coarse Silty Fine Sand	Slightly Fine Gravelly Very Coarse Silty Fine Sand
FOLK AND WARD METHOD (µm)	MEDIAN GRAIN SIZE D ₅₀ (µm)	1642.43	574.6	209.59	120.2	97.6
	MEAN GRAIN SIZE (µm)	1424.31	647.4	210.1	129.2	65.1
	SORTING	2.571	8.041	8.72	8.110	4.052
	SKEWNESS	-0.468	-0.042	0.063	0.025	-0.399
	KURTOSIS	2.320	1.088	1.356	0.848	0.835
FOLK AND WARD METHOD (phi)	MEDIAN GRAIN SIZE D ₅₀ (phi):	-0.716	0.799	2.254	3.057	3.357
	MEAN GRAIN SIZE (phi):	-0.510	0.627	2.251	2.952	3.941
	SORTING	1.362	3.007	3.124	3.020	2.019
	SKEWNESS	0.468	0.042	-0.063	-0.025	0.399
	KURTOSIS	2.320	1.088	1.356	0.848	0.835
FOLK AND WARD METHOD (Description)	MEAN:	Very Coarse Sand	Coarse Sand	Fine Sand	Fine Sand	Very Fine Sand
	SORTING:	Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted
	SKEWNESS:	Very Fine Skewed	Symmetrical	Symmetrical	Symmetrical	Very Fine Skewed
	KURTOSIS:	Very Leptokurtic	Mesokurtic	Leptokurtic	Platykurtic	Platykurtic
BULK GRAIN SIZE	% GRAVEL:	32.64	30.18	10.79	8.65	0.53
	% SAND:	62.42	55.37	68.02	54.11	60.91
	% MUD:	4.94	14.46	21.19	37.25	38.56
	% V COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% COARSE GRAVEL:	0.00	0.00	6.68	0.00	0.00
	% MEDIUM GRAVEL:	0.00	11.95	0.00	1.59	0.00
	% FINE GRAVEL:	1.71	8.48	0.45	1.70	0.38
	% V FINE GRAVEL:	30.93	9.75	3.66	5.35	0.15
	% V COARSE SAND:	47.30	12.10	11.83	11.64	0.54
	% COARSE SAND:	7.10	10.62	10.77	5.71	0.58
	% MEDIUM SAND:	4.09	18.96	12.39	9.15	12.49
	% FINE SAND:	2.08	9.99	18.33	14.01	27.30
	% V FINE SAND:	1.85	3.70	14.69	13.60	20.01
	% V COARSE SILT:	1.48	3.39	4.92	10.00	9.50
	% COARSE SILT:	1.34	3.74	4.95	9.53	9.25
	% MEDIUM SILT:	1.10	3.60	5.27	8.50	9.41
	% FINE SILT:	0.79	2.83	4.46	6.79	7.76
% V FINE SILT:	0.23	0.89	1.59	2.37	2.61	
% CLAY:	0.00	0.00	0.02	0.05	0.03	

SAMPLE	PARAMETER	D3-G2	D3-G3	D3-G4	D3-G5	D3-G6
SAMPLE TYPE:		Polymodal, Very Poorly Sorted	Bimodal, Very Poorly Sorted	Unimodal, Poorly Sorted	Bimodal, Very Poorly Sorted	Trimodal, Very Poorly Sorted
TEXTURAL GROUP:		Gravelly Muddy Sand	Slightly Gravelly Muddy Sand	Muddy Sandy Gravel	Slightly Gravelly Muddy Sand	Muddy Sandy Gravel
SEDIMENT NAME:		Very Fine Gravelly Coarse Silty Fine Sand	Slightly Medium Gravelly Medium Silty Fine Sand	Very Coarse Silty Sandy Very Fine Gravel	Slightly Very Fine Gravelly Medium Silty Fine Sand	Very Coarse Silty Sandy Medium Gravel
FOLK AND WARD METHOD (μm)	MEDIAN GRAIN SIZE D_{50} (μm)	241.231	106.0	1981.1	107.0	3323.4
	MEAN GRAIN SIZE (μm)	286.3	65.410	1908.269	64.990	1409.252
	SORTING	8.0	4.355	2.536	4.258	10.168
	SKEWNESS	0.072	-0.427	-0.365	-0.455	-0.548
	KURTOSIS	1.355	0.813	2.990	0.857	0.776
FOLK AND WARD METHOD (ϕ)	MEDIAN GRAIN SIZE D_{50} (ϕ):	2.1	3.237	-0.986	3.224	-1.733
	MEAN GRAIN SIZE (ϕ):	1.8	3.934	-0.932	3.944	-0.495
	SORTING	3.0	2.123	1.342	2.090	3.346
	SKEWNESS	-0.072	0.427	0.365	0.455	0.548
	KURTOSIS	1.355	0.813	2.990	0.857	0.776
FOLK AND WARD METHOD (Description)	MEAN:	Medium Sand	Very Fine Sand	Very Coarse Sand	Very Fine Sand	Very Coarse Sand
	SORTING:	Very Poorly Sorted	Very Poorly Sorted	Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted
	SKEWNESS:	Symmetrical	Very Fine Skewed	Very Fine Skewed	Very Fine Skewed	Very Fine Skewed
	KURTOSIS:	Leptokurtic	Platykurtic	Very Leptokurtic	Platykurtic	Platykurtic
BULK GRAIN SIZE	% GRAVEL:	17.91	1.32	49.25	0.36	57.25
	% SAND:	64.24	61.91	45.34	65.28	28.61
	% MUD:	17.85	36.77	5.41	34.36	14.14
	% V COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% COARSE GRAVEL:	0.00	0.00	0.00	0.00	2.26
	% MEDIUM GRAVEL:	5.60	0.84	0.00	0.00	25.83
	% FINE GRAVEL:	5.46	0.13	7.13	0.03	19.27
	% V FINE GRAVEL:	6.85	0.34	42.12	0.33	9.89
	% V COARSE SAND:	6.63	0.61	38.01	1.23	11.64
	% COARSE SAND:	6.17	0.78	1.16	0.48	2.44
	% MEDIUM SAND:	17.95	13.32	1.61	12.58	2.48
	% FINE SAND:	24.23	28.36	2.14	29.37	5.21
	% V FINE SAND:	9.26	18.83	2.43	21.63	6.84
	% V COARSE SILT:	3.20	7.26	1.86	6.95	4.23
	% COARSE SILT:	4.84	8.08	1.45	6.55	3.64
	% MEDIUM SILT:	4.79	9.67	1.10	9.00	3.30
	% FINE SILT:	3.87	8.68	0.78	8.67	2.36
% V FINE SILT:	1.14	3.04	0.22	3.13	0.61	
% CLAY:	0.00	0.04	0.00	0.06	0.00	

SAMPLE	PARAMETER	D3-G7	D3-G8	D3-G9	D3-G10	D5-G1
SAMPLE TYPE:		Bimodal, Very Poorly Sorted	Unimodal, Very Poorly Sorted	Unimodal, Poorly Sorted	Polymodal, Very Poorly Sorted	Unimodal, Poorly Sorted
TEXTURAL GROUP:		Muddy Sandy Gravel	Gravelly Muddy Sand	Muddy Sandy Gravel	Gravelly Muddy Sand	Slightly Gravelly Sand
SEDIMENT NAME:		Coarse Silty Sandy Very Fine Gravel	Very Fine Gravelly Very Coarse Silty Very Coarse Sand	Coarse Silty Sandy Very Fine Gravel	Very Fine Gravelly Medium Silty Very Coarse Sand	Slightly Very Fine Gravelly Fine Sand
FOLK AND WARD METHOD (µm)	MEDIAN GRAIN SIZE D ₅₀ (µm)	2207.5	923.6	1644.2	1127.7	209.7
	MEAN GRAIN SIZE (µm)	1621.549	596.905	1687.354	390.721	214.928
	SORTING	4.359	4.831	2.964	8.561	2.605
	SKEWNESS	-0.516	-0.491	-0.203	-0.658	0.017
	KURTOSIS	2.793	1.459	3.301	0.780	2.079
FOLK AND WARD METHOD (phi)	MEDIAN GRAIN SIZE D ₅₀ (phi):	-1.142	0.115	-0.717	-0.173	2.254
	MEAN GRAIN SIZE (phi):	-0.697	0.744	-0.755	1.356	2.218
	SORTING	2.124	2.272	1.567	3.098	1.381
	SKEWNESS	0.516	0.491	0.203	0.658	-0.017
	KURTOSIS	2.793	1.459	3.301	0.780	2.079
FOLK AND WARD METHOD (Description)	MEAN:	Very Coarse Sand	Coarse Sand	Very Coarse Sand	Medium Sand	Fine Sand
	SORTING:	Very Poorly Sorted	Very Poorly Sorted	Poorly Sorted	Very Poorly Sorted	Poorly Sorted
	SKEWNESS:	Very Fine Skewed	Very Fine Skewed	Fine Skewed	Very Fine Skewed	Symmetrical
	KURTOSIS:	Very Leptokurtic	Leptokurtic	Extremely Leptokurtic	Platykurtic	Very Leptokurtic
BULK GRAIN SIZE	% GRAVEL:	55.48	19.21	31.11	25.25	3.35
	% SAND:	34.49	67.97	61.80	50.73	90.43
	% MUD:	10.03	12.82	7.09	24.02	6.22
	% V COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% MEDIUM GRAVEL:	4.18	0.00	3.46	0.00	0.00
	% FINE GRAVEL:	12.44	1.61	5.86	2.60	0.86
	% V FINE GRAVEL:	38.86	17.60	21.80	22.65	2.49
	% V COARSE SAND:	27.74	28.15	53.06	28.34	5.05
	% COARSE SAND:	0.69	22.70	4.54	4.31	3.00
	% MEDIUM SAND:	1.14	9.36	1.42	6.11	26.57
	% FINE SAND:	2.08	3.51	1.16	6.03	43.50
	% V FINE SAND:	2.84	4.25	1.61	5.94	12.30
	% V COARSE SILT:	2.52	3.67	1.96	5.16	0.59
	% COARSE SILT:	2.60	3.65	2.06	5.62	1.78
	% MEDIUM SILT:	2.46	2.96	1.65	6.01	1.67
	% FINE SILT:	1.90	2.01	1.12	5.27	1.68
% V FINE SILT:	0.56	0.53	0.30	1.92	0.50	
% CLAY:	0.00	0.00	0.00	0.05	0.00	

SAMPLE	PARAMETER	D5-G2	D5-G3	D5-G4	D5-G5	D5-G6
SAMPLE TYPE:		Trimodal, Very Poorly Sorted	Bimodal, Poorly Sorted	Unimodal, Poorly Sorted	Bimodal, Very Poorly Sorted	Bimodal, Very Poorly Sorted
TEXTURAL GROUP:		Gravelly Muddy Sand	Gravel	Sandy Gravel	Gravelly Muddy Sand	Slightly Gravelly Muddy Sand
SEDIMENT NAME:		Very Fine Gravelly Medium Silty Fine Sand	Fine Gravel	Sandy Very Fine Gravel	Fine Gravelly Medium Silty Medium Sand	Slightly Fine Gravelly Fine Silty Fine Sand
FOLK AND WARD METHOD (μm)	MEDIAN GRAIN SIZE D_{50} (μm)	162.0	4523.24	2344.96	284.43	101.05
	MEAN GRAIN SIZE (μm)	132.745	4384.731	2436.934	300.801	56.604
	SORTING	8.098	2.015	2.247	5.008	4.469
	SKEWNESS	-0.120	0.000	-0.141	-0.007	-0.495
	KURTOSIS	0.975	1.221	1.827	1.997	0.726
FOLK AND WARD METHOD (ϕ)	MEDIAN GRAIN SIZE D_{50} (ϕ):	2.626	-2.177	-1.230	1.814	3.307
	MEAN GRAIN SIZE (ϕ):	2.913	-2.132	-1.285	1.733	4.143
	SORTING	3.018	1.011	1.168	2.324	2.160
	SKEWNESS	0.120	0.000	0.141	0.007	0.495
	KURTOSIS	0.975	1.221	1.827	1.997	0.726
FOLK AND WARD METHOD (Description)	MEAN:	Fine Sand	Fine Gravel	Very Fine Gravel	Medium Sand	Very Coarse Silt
	SORTING:	Very Poorly Sorted	Poorly Sorted	Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted
	SKEWNESS:	Fine Skewed	Symmetrical	Fine Skewed	Symmetrical	Very Fine Skewed
	KURTOSIS:	Mesokurtic	Leptokurtic	Very Leptokurtic	Very Leptokurtic	Platykurtic
BULK GRAIN SIZE	% GRAVEL:	9.18	89.12	61.98	9.99	0.53
	% SAND:	57.94	9.26	34.75	75.39	61.61
	% MUD:	32.88	1.62	3.28	14.61	37.85
	% V COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% COARSE GRAVEL:	0.00	7.25	0.00	0.00	0.00
	% MEDIUM GRAVEL:	0.20	9.06	2.67	3.20	0.00
	% FINE GRAVEL:	1.72	41.84	16.31	3.47	0.28
	% V FINE GRAVEL:	7.25	30.96	43.00	3.32	0.25
	% V COARSE SAND:	8.08	7.37	30.03	6.67	0.49
	% COARSE SAND:	3.42	0.20	1.75	11.44	0.07
	% MEDIUM SAND:	15.94	0.42	1.05	27.73	10.20
	% FINE SAND:	20.44	0.61	0.91	24.33	30.71
	% V FINE SAND:	10.06	0.68	1.01	5.23	20.14
	% V COARSE SILT:	6.44	0.56	0.90	2.37	5.69
	% COARSE SILT:	7.72	0.46	0.88	3.54	6.56
	% MEDIUM SILT:	8.40	0.33	0.76	3.98	10.07
	% FINE SILT:	7.48	0.22	0.56	3.53	10.89
% V FINE SILT:	2.77	0.06	0.17	1.18	4.46	
% CLAY:	0.07	0.00	0.00	0.00	0.18	

SAMPLE	PARAMETER	D5-G7	T1-G1	T1-G2	T1-G3	T1-G4
SAMPLE TYPE:		Bimodal, Very Poorly Sorted	Bimodal, Very Poorly Sorted	Bimodal, Very Poorly Sorted	Unimodal, Very Poorly Sorted	Unimodal, Poorly Sorted
TEXTURAL GROUP:		Slightly Gravelly Muddy Sand	Slightly Gravelly Sandy Mud	Slightly Gravelly Sandy Mud	Slightly Gravelly Sandy Mud	Slightly Gravelly Sandy Mud
SEDIMENT NAME:		Slightly Medium Gravelly Fine Silty Medium Sand	Slightly Very Fine Gravelly Fine Sandy Fine Silt	Slightly Fine Gravelly Very Fine Sandy Fine Silt	Slightly Very Fine Gravelly Very Fine Sandy Fine Silt	Slightly Very Fine Gravelly Very Fine Sandy Fine Silt
FOLK AND WARD METHOD (µm)	MEDIAN GRAIN SIZE D ₅₀ (µm)	150.8	27.91	14.06	17.75	12.23
	MEAN GRAIN SIZE (µm)	81.744	29.347	18.069	21.015	15.148
	SORTING	6.276	4.511	4.333	4.219	3.692
	SKEWNESS	-0.374	0.038	0.279	0.182	0.279
	KURTOSIS	0.767	0.703	0.927	0.843	0.988
FOLK AND WARD METHOD (phi)	MEDIAN GRAIN SIZE D ₅₀ (phi):	2.729	5.163	6.152	5.816	6.354
	MEAN GRAIN SIZE (phi):	3.613	5.091	5.790	5.572	6.045
	SORTING	2.650	2.174	2.115	2.077	1.884
	SKEWNESS	0.374	-0.038	-0.279	-0.182	-0.279
	KURTOSIS	0.767	0.703	0.927	0.843	0.988
FOLK AND WARD METHOD (Description)	MEAN:	Very Fine Sand	Coarse Silt	Coarse Silt	Coarse Silt	Medium Silt
	SORTING:	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Poorly Sorted
	SKEWNESS:	Very Fine Skewed	Symmetrical	Coarse Skewed	Coarse Skewed	Coarse Skewed
	KURTOSIS:	Platykurtic	Platykurtic	Mesokurtic	Platykurtic	Mesokurtic
BULK GRAIN SIZE	% GRAVEL:	3.37	0.55	0.32	0.21	0.02
	% SAND:	59.06	36.00	20.96	24.16	16.18
	% MUD:	37.57	63.44	78.73	75.64	83.80
	% V COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% COARSE GRAVEL:	0.76	0.00	0.00	0.00	0.00
	% MEDIUM GRAVEL:	1.10	0.00	0.08	0.00	0.00
	% FINE GRAVEL:	0.81	0.24	0.14	0.00	0.00
	% V FINE GRAVEL:	0.71	0.31	0.09	0.21	0.02
	% V COARSE SAND:	2.31	0.09	0.19	0.18	0.02
	% COARSE SAND:	6.15	0.01	0.88	0.18	0.23
	% MEDIUM SAND:	22.08	5.56	5.16	4.68	3.16
	% FINE SAND:	20.86	15.67	6.00	8.28	5.25
	% V FINE SAND:	7.67	14.67	8.72	10.84	7.53
	% V COARSE SILT:	5.13	11.53	10.71	13.17	10.26
	% COARSE SILT:	7.48	12.41	15.12	15.45	16.02
	% MEDIUM SILT:	10.18	15.66	20.10	18.52	22.53
	% FINE SILT:	10.36	16.11	20.94	18.63	23.27
% V FINE SILT:	4.25	7.22	10.68	9.04	10.82	
% CLAY:	0.19	0.51	1.18	0.84	0.89	

SAMPLE	PARAMETER	T1-G5	T1-G6	T1-G7	T1-G8	T1-G9
SAMPLE TYPE:		Unimodal, Poorly Sorted	Trimodal, Very Poorly Sorted	Bimodal, Very Poorly Sorted	Bimodal, Very Poorly Sorted	Trimodal, Very Poorly Sorted
TEXTURAL GROUP:		Slightly Gravelly Sandy Mud	Gravelly Mud	Slightly Gravelly Sandy Mud	Slightly Gravelly Sandy Mud	Gravelly Muddy Sand
SEDIMENT NAME:		Slightly Very Fine Gravelly Very Fine Sandy Medium Silt	Coarse Gravelly Fine Silt	Slightly Medium Gravelly Fine Sandy Fine Silt	Slightly Medium Gravelly Fine Sandy Fine Silt	Fine Gravelly Fine Silty Fine Sand
FOLK AND WARD METHOD (µm)	MEDIAN GRAIN SIZE D ₅₀ (µm)	17.2	43.15	68.47	33.70	152.28
	MEAN GRAIN SIZE (µm)	19.758	40.878	46.774	33.837	175.798
	SORTING	3.862	8.748	5.267	4.894	14.379
	SKEWNESS	0.165	0.138	-0.288	-0.013	0.026
	KURTOSIS	0.852	0.993	0.633	0.653	0.893
FOLK AND WARD METHOD (phi)	MEDIAN GRAIN SIZE D ₅₀ (phi):	5.863	4.535	3.868	4.891	2.715
	MEAN GRAIN SIZE (phi):	5.661	4.613	4.418	4.885	2.508
	SORTING	1.949	3.129	2.397	2.291	3.846
	SKEWNESS	-0.165	-0.138	0.288	0.013	-0.026
	KURTOSIS	0.852	0.993	0.633	0.653	0.893
FOLK AND WARD METHOD (Description)	MEAN:	Coarse Silt	Very Coarse Silt	Very Coarse Silt	Very Coarse Silt	Fine Sand
	SORTING:	Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted
	SKEWNESS:	Coarse Skewed	Coarse Skewed	Fine Skewed	Symmetrical	Symmetrical
	KURTOSIS:	Platykurtic	Mesokurtic	Very Platykurtic	Very Platykurtic	Platykurtic
BULK GRAIN SIZE	% GRAVEL:	0.11	8.38	1.77	0.44	22.51
	% SAND:	21.90	38.51	49.04	42.50	40.88
	% MUD:	77.98	53.11	49.19	57.06	36.61
	% V COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% COARSE GRAVEL:	0.00	3.59	0.00	0.00	0.00
	% MEDIUM GRAVEL:	0.00	1.09	0.92	0.23	0.78
	% FINE GRAVEL:	0.01	1.69	0.56	0.01	21.38
	% V FINE GRAVEL:	0.10	2.02	0.29	0.20	0.36
	% V COARSE SAND:	0.22	1.27	0.53	0.19	0.59
	% COARSE SAND:	0.04	0.03	0.16	0.02	0.19
	% MEDIUM SAND:	2.98	9.35	13.77	8.83	11.48
	% FINE SAND:	7.33	18.98	24.93	21.26	20.76
	% V FINE SAND:	11.34	8.88	9.64	12.20	7.87
	% V COARSE SILT:	13.81	6.37	4.90	7.99	3.94
	% COARSE SILT:	16.57	9.62	9.03	11.36	7.28
	% MEDIUM SILT:	19.53	13.20	13.19	14.44	9.92
	% FINE SILT:	18.94	15.08	14.69	15.24	10.50
% V FINE SILT:	8.51	7.96	6.86	7.39	4.66	
% CLAY:	0.63	0.88	0.52	0.65	0.31	

SAMPLE	PARAMETER	T1-G10	FG03	FG04	FG05	FG06
SAMPLE TYPE:		Bimodal, Very Poorly Sorted	Trimodal, Very Poorly Sorted	Trimodal, Very Poorly Sorted	Polymodal, Very Poorly Sorted	Trimodal, Very Poorly Sorted
TEXTURAL GROUP:		Slightly Gravelly Sandy Mud	Gravelly Muddy Sand	Gravelly Muddy Sand	Gravelly Muddy Sand	Gravelly Muddy Sand
SEDIMENT NAME:		Slightly Very Fine Gravelly Very Fine Sandy Fine Silt	Very Fine Gravelly Very Coarse Silty Very Coarse Sand	Very Fine Gravelly Very Coarse Silty Very Coarse Sand	Very Fine Gravelly Very Coarse Silty Very Coarse Sand	Very Fine Gravelly Very Coarse Silty Very Fine Sand
FOLK AND WARD METHOD (μm)	MEDIAN GRAIN SIZE D_{50} (μm)	49.4	242.83	882.11	175.39	156.76
	MEAN GRAIN SIZE (μm)	38.231	205.393	420.945	172.720	171.040
	SORTING	4.688	8.013	6.268	9.150	6.979
	SKEWNESS	-0.206	-0.157	-0.584	-0.015	-0.011
	KURTOSIS	0.708	0.691	0.850	0.821	0.850
FOLK AND WARD METHOD (ϕ)	MEDIAN GRAIN SIZE D_{50} (ϕ):	4.340	2.042	0.181	2.511	2.673
	MEAN GRAIN SIZE (ϕ):	4.709	2.284	1.248	2.533	2.548
	SORTING	2.229	3.002	2.648	3.194	2.803
	SKEWNESS	0.206	0.157	0.584	0.015	0.011
	KURTOSIS	0.708	0.691	0.850	0.821	0.850
FOLK AND WARD METHOD (Description)	MEAN:	Very Coarse Silt	Fine Sand	Medium Sand	Fine Sand	Fine Sand
	SORTING:	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted
	SKEWNESS:	Fine Skewed	Fine Skewed	Very Fine Skewed	Symmetrical	Symmetrical
	KURTOSIS:	Platykurtic	Platykurtic	Platykurtic	Platykurtic	Platykurtic
BULK GRAIN SIZE	% GRAVEL:	0.53	13.70	15.23	13.44	7.43
	% SAND:	44.75	56.01	65.46	56.40	65.59
	% MUD:	54.73	30.29	19.31	30.16	26.98
	% V COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% MEDIUM GRAVEL:	0.00	0.00	0.40	2.58	0.00
	% FINE GRAVEL:	0.21	1.17	1.90	3.67	0.51
	% V FINE GRAVEL:	0.32	12.53	12.93	7.18	6.92
	% V COARSE SAND:	0.62	26.31	33.51	16.46	17.06
	% COARSE SAND:	0.05	4.00	8.01	6.99	7.22
	% MEDIUM SAND:	7.68	5.69	7.84	7.98	8.85
	% FINE SAND:	17.83	8.66	7.81	11.65	15.24
	% V FINE SAND:	18.57	11.34	8.28	13.32	17.22
	% V COARSE SILT:	11.88	8.61	5.72	7.77	7.96
	% COARSE SILT:	9.09	7.69	5.00	6.82	6.18
	% MEDIUM SILT:	12.58	6.87	4.28	7.00	6.18
	% FINE SILT:	13.95	5.35	3.23	6.13	4.98
% V FINE SILT:	6.68	1.75	1.07	2.36	1.66	
% CLAY:	0.55	0.02	0.01	0.08	0.01	

SAMPLE	PARAMETER	FG09	FG23	FG25	FG26	FG27
SAMPLE TYPE:		Unimodal, Poorly Sorted	Polymodal, Very Poorly Sorted	Unimodal, Poorly Sorted	Bimodal, Very Poorly Sorted	Bimodal, Very Poorly Sorted
TEXTURAL GROUP:		Gravelly Muddy Sand	Slightly Gravelly Muddy Sand	Gravelly Muddy Sand	Gravelly Muddy Sand	Gravelly Muddy Sand
SEDIMENT NAME:		Very Fine Gravelly Very Coarse Silty Very Coarse Sand	Slightly Very Fine Gravelly Very Coarse Silty Very Fine Sand	Very Fine Gravelly Coarse Silty Medium Sand	Very Fine Gravelly Very Coarse Silty Very Coarse Sand	Very Fine Gravelly Very Coarse Silty Very Coarse Sand
FOLK AND WARD METHOD (μm)	MEDIAN GRAIN SIZE D_{50} (μm)	1326.1	86.80	525.35	1035.71	1040.92
	MEAN GRAIN SIZE (μm)	878.163	88.842	514.436	652.899	466.100
	SORTING	3.547	7.011	3.531	4.182	5.755
	SKEWNESS	-0.632	0.020	-0.227	-0.555	-0.659
	KURTOSIS	2.161	0.866	1.632	1.239	1.050
FOLK AND WARD METHOD (ϕ)	MEDIAN GRAIN SIZE D_{50} (ϕ):	-0.407	3.526	0.929	-0.051	-0.058
	MEAN GRAIN SIZE (ϕ):	0.187	3.493	0.959	0.615	1.101
	SORTING	1.827	2.810	1.820	2.064	2.525
	SKEWNESS	0.632	-0.020	0.227	0.555	0.659
	KURTOSIS	2.161	0.866	1.632	1.239	1.050
FOLK AND WARD METHOD (Description)	MEAN:	Coarse Sand	Very Fine Sand	Coarse Sand	Coarse Sand	Medium Sand
	SORTING:	Poorly Sorted	Very Poorly Sorted	Poorly Sorted	Very Poorly Sorted	Very Poorly Sorted
	SKEWNESS:	Very Fine Skewed	Symmetrical	Fine Skewed	Very Fine Skewed	Very Fine Skewed
	KURTOSIS:	Very Leptokurtic	Platykurtic	Very Leptokurtic	Leptokurtic	Mesokurtic
BULK GRAIN SIZE	% GRAVEL:	17.82	3.76	6.54	15.17	13.31
	% SAND:	73.06	53.55	82.17	74.22	69.16
	% MUD:	9.11	42.69	11.29	10.61	17.54
	% V COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% MEDIUM GRAVEL:	0.00	0.00	0.00	1.12	0.00
	% FINE GRAVEL:	1.64	0.31	0.54	1.59	1.92
	% V FINE GRAVEL:	16.18	3.45	6.01	12.46	11.39
	% V COARSE SAND:	52.59	9.92	18.76	36.60	38.76
	% COARSE SAND:	9.20	6.74	26.90	14.78	12.43
	% MEDIUM SAND:	4.26	8.76	27.09	11.79	8.46
	% FINE SAND:	3.49	12.16	7.38	6.38	4.66
	% V FINE SAND:	3.53	15.97	2.04	4.66	4.85
	% V COARSE SILT:	2.91	11.62	2.99	3.42	5.22
	% COARSE SILT:	2.53	10.28	3.02	2.94	4.95
	% MEDIUM SILT:	1.88	9.69	2.70	2.24	3.83
	% FINE SILT:	1.35	8.01	2.00	1.55	2.71
% V FINE SILT:	0.44	3.00	0.58	0.46	0.83	
% CLAY:	0.00	0.09	0.00	0.00	0.00	

SAMPLE	PARAMETER	SG02	SG03	SG05	SG08	SG09
SAMPLE TYPE:		Unimodal, Poorly Sorted	Unimodal, Poorly Sorted	Unimodal, Poorly Sorted	Unimodal, Poorly Sorted	Unimodal, Poorly Sorted
TEXTURAL GROUP:		Slightly Gravelly Sandy Mud	Slightly Gravelly Sandy Mud	Slightly Gravelly Sandy Mud	Slightly Gravelly Sandy Mud	Slightly Gravelly Sandy Mud
SEDIMENT NAME:		Slightly Very Fine Gravelly Very Fine Sandy Very Coarse Silt	Slightly Very Fine Gravelly Very Fine Sandy Very Coarse Silt	Slightly Fine Gravelly Very Fine Sandy Very Coarse Silt	Slightly Very Fine Gravelly Very Fine Sandy Very Coarse Silt	Slightly Very Fine Gravelly Very Fine Sandy Very Coarse Silt
FOLK AND WARD METHOD (μm)	MEDIAN GRAIN SIZE D_{50} (μm)	39.9	42.70	50.85	48.87	38.10
	MEAN GRAIN SIZE (μm)	38.594	41.030	47.197	44.991	37.013
	SORTING	2.703	2.832	2.688	2.729	3.219
	SKEWNESS	-0.062	-0.063	-0.114	-0.128	-0.036
	KURTOSIS	1.016	1.048	1.096	1.094	0.966
FOLK AND WARD METHOD (ϕ)	MEDIAN GRAIN SIZE D_{50} (ϕ):	4.647	4.550	4.297	4.355	4.714
	MEAN GRAIN SIZE (ϕ):	4.695	4.607	4.405	4.474	4.756
	SORTING	1.435	1.502	1.427	1.448	1.686
	SKEWNESS	0.062	0.063	0.114	0.128	0.036
	KURTOSIS	1.016	1.048	1.096	1.094	0.966
FOLK AND WARD METHOD (Description)	MEAN:	Very Coarse Silt	Very Coarse Silt	Very Coarse Silt	Very Coarse Silt	Very Coarse Silt
	SORTING:	Poorly Sorted	Poorly Sorted	Poorly Sorted	Poorly Sorted	Poorly Sorted
	SKEWNESS:	Symmetrical	Symmetrical	Fine Skewed	Fine Skewed	Symmetrical
	KURTOSIS:	Mesokurtic	Mesokurtic	Mesokurtic	Mesokurtic	Mesokurtic
BULK GRAIN SIZE	% GRAVEL:	0.24	0.13	0.37	0.69	0.03
	% SAND:	31.62	34.66	40.48	38.36	33.44
	% MUD:	68.14	65.21	59.14	60.95	66.53
	% V COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% COARSE GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% MEDIUM GRAVEL:	0.00	0.00	0.00	0.00	0.00
	% FINE GRAVEL:	0.02	0.00	0.20	0.24	0.00
	% V FINE GRAVEL:	0.22	0.13	0.17	0.45	0.03
	% V COARSE SAND:	0.29	0.13	0.52	0.84	0.03
	% COARSE SAND:	0.10	0.20	0.60	0.08	0.13
	% MEDIUM SAND:	2.05	3.17	2.72	2.17	4.16
	% FINE SAND:	8.09	9.41	9.91	9.35	10.63
	% V FINE SAND:	21.09	21.75	26.73	25.91	18.49
	% V COARSE SILT:	28.13	27.44	28.46	28.63	23.24
	% COARSE SILT:	21.99	20.34	16.98	17.21	20.02
	% MEDIUM SILT:	11.64	10.82	8.71	9.30	13.25
	% FINE SILT:	5.58	5.68	4.41	5.05	8.20
% V FINE SILT:	0.80	0.93	0.58	0.76	1.83	
% CLAY:	0.00	0.00	0.00	0.00	0.00	

ANNEX 3: SEDIMENT SUMMARY

ARRAN								
Station	Sediment Type	Median phi	Mean phi	Sorting (phi scale)		% Gravel	% Sand	% Mud
D1G1	Slightly Gravelly Muddy Sand	2.56	3.44	2.17	Very Poorly Sorted	0.35	72.21	27.44
D1G2	Slightly Gravelly Muddy Sand	3.30	4.04	2.03	Very Poorly Sorted	0.22	63.39	36.39
D1G4	Gravelly Muddy Sand	2.42	2.62	3.09	Very Poorly Sorted	11.97	60.73	27.30
D1G5	Gravelly Muddy Sand	1.88	2.20	2.84	Very Poorly Sorted	10.23	65.68	24.09
D1G6	Gravelly Muddy Sand	2.72	3.33	2.54	Very Poorly Sorted	6.24	65.20	28.56
D1G7	Sandy Gravel	-0.72	-0.51	1.36	Poorly Sorted	32.64	62.42	4.94
D1G8	Muddy Sandy Gravel	0.80	0.63	3.01	Very Poorly Sorted	30.18	55.37	14.46
D1G9	Gravelly Muddy Sand	2.25	2.25	3.12	Very Poorly Sorted	10.79	68.02	21.19
D1G10	Gravelly Muddy Sand	3.06	2.95	3.02	Very Poorly Sorted	8.65	54.11	37.25
D3G1	Slightly Gravelly Muddy Sand	3.36	3.94	2.02	Very Poorly Sorted	0.53	60.91	38.56
D3G2	Gravelly Muddy Sand	2.05	1.80	3.00	Very Poorly Sorted	17.91	64.24	17.85
D3G3	Slightly Gravelly Muddy Sand	3.24	3.93	2.12	Very Poorly Sorted	1.32	61.91	36.77
D3G4	Muddy Sandy Gravel	-0.99	-0.93	1.34	Poorly Sorted	49.25	45.34	5.41
D3G5	Slightly Gravelly Muddy Sand	3.22	3.94	2.09	Very Poorly Sorted	0.36	65.28	34.36
D3G6	Muddy Sandy Gravel	-1.73	-0.49	3.35	Very Poorly Sorted	57.25	28.61	14.14
D3G7	Muddy Sandy Gravel	-1.14	-0.70	2.12	Very Poorly Sorted	55.48	34.49	10.03
D3G8	Gravelly Muddy Sand	0.11	0.74	2.27	Very Poorly Sorted	19.21	67.97	12.82
D3G9	Muddy Sandy Gravel	-0.72	-0.75	1.57	Poorly Sorted	31.11	61.80	7.09
D3G10	Gravelly Muddy Sand	-0.17	1.36	3.10	Very Poorly Sorted	25.25	50.73	24.02
D5G1	Slightly Gravelly Sand	2.25	2.22	1.38	Poorly Sorted	3.35	90.43	6.22
D5G2	Gravelly Muddy Sand	2.63	2.91	3.02	Very Poorly Sorted	9.18	57.94	32.88
D5G3	Gravel	-2.18	-2.13	1.01	Poorly Sorted	89.12	9.26	1.62
D5G4	Sandy Gravel	-1.23	-1.29	1.17	Poorly Sorted	61.98	34.75	3.28
D5G5	Gravelly Muddy Sand	1.81	1.73	2.32	Very Poorly Sorted	9.99	75.39	14.61
D5G6	Slightly Gravelly Muddy Sand	3.31	4.14	2.16	Very Poorly Sorted	0.53	61.61	37.85

ARRAN								
Station	Sediment Type	Median phi	Mean phi	Sorting (phi scale)		% Gravel	% Sand	% Mud
D5G7	Slightly Gravelly Muddy Sand	2.73	3.61	2.65	Very Poorly Sorted	3.37	59.06	37.57
T1G1	Slightly Gravelly Sandy Mud	5.16	5.09	2.17	Very Poorly Sorted	0.55	36.00	63.44
T1G2	Slightly Gravelly Sandy Mud	6.15	5.79	2.12	Very Poorly Sorted	0.32	20.96	78.73
T1G3	Slightly Gravelly Sandy Mud	5.82	5.57	2.08	Very Poorly Sorted	0.21	24.16	75.64
T1G4	Slightly Gravelly Sandy Mud	6.35	6.04	1.88	Poorly Sorted	0.02	16.18	83.80
T1G5	Slightly Gravelly Sandy Mud	5.86	5.66	1.95	Poorly Sorted	0.11	21.90	77.98
T1G6	Gravelly Mud	4.53	4.61	3.13	Very Poorly Sorted	8.38	38.51	53.11
T1G7	Slightly Gravelly Sandy Mud	3.87	4.42	2.40	Very Poorly Sorted	1.77	49.04	49.19
T1G8	Slightly Gravelly Sandy Mud	4.89	4.89	2.29	Very Poorly Sorted	0.44	42.50	57.06
T1G9	Gravelly Muddy Sand	2.72	2.51	3.85	Very Poorly Sorted	22.51	40.88	36.61
T1G10	Slightly Gravelly Sandy Mud	4.34	4.71	2.23	Very Poorly Sorted	0.53	44.75	54.73

LOCH FYNE								
Station	Sediment Type	Median phi	Mean phi	Sorting (phi scale)		% Gravel	% Sand	% Mud
FG03	Gravelly Muddy Sand	2.04	2.28	3.00	Very Poorly Sorted	13.6973	56.01	30.3
FG04	Gravelly Muddy Sand	0.18	1.25	2.65	Very Poorly Sorted	15.2298	65.46	19.3
FG05	Gravelly Muddy Sand	2.51	2.53	3.19	Very Poorly Sorted	13.4375	56.4	30.2
FG06	Gravelly Muddy Sand	2.67	2.55	2.80	Very Poorly Sorted	7.43255	65.59	27
FG09	Gravelly Muddy Sand	-0.41	0.19	1.83	Poorly Sorted	17.8219	73.06	9.11
FG23	Slightly Gravelly Muddy Sand	3.53	3.49	2.81	Very Poorly Sorted	3.75703	53.55	42.7
FG25	Gravelly Muddy Sand	0.93	0.96	1.82	Poorly Sorted	6.54295	82.17	11.3
FG26	Gravelly Muddy Sand	-0.05	0.62	2.06	Very Poorly Sorted	15.1666	74.22	10.6
FG27	Gravelly Muddy Sand	-0.06	1.10	2.52	Very Poorly Sorted	13.306	69.16	17.5
SG02	Slightly Gravelly Sandy Mud	4.65	4.70	1.43	Poorly Sorted	0.24378	31.62	68.1
SG03	Slightly Gravelly Sandy Mud	4.55	4.61	1.50	Poorly Sorted	0.12775	34.66	65.2
SG05	Slightly Gravelly Sandy Mud	4.30	4.41	1.43	Poorly Sorted	0.37352	40.48	59.1
SG08	Slightly Gravelly Sandy Mud	4.35	4.47	1.45	Poorly Sorted	0.69158	38.36	61
SG09	Slightly Gravelly Sandy Mud	4.71	4.76	1.69	Poorly Sorted	0.02868	33.44	66.5

ANNEX 4: SPECIES DATA - ARRAN

Taxa	D1G1	D1G2	D1G4	D1G5	D1G6	D1G7	D1G8	D1G9	D1G10	D3G1	D3G2	D3G3
<i>Grania</i> spp.						2						
<i>Tubificoides amplivasatus</i>												
<i>Euphrosine</i> sp.												
<i>Protodorvillea kefersteini</i>						2	3					
<i>Eunice</i> spp.				1							1	
<i>Eunice pennata</i>											1	
<i>Leodice harassii</i>			3									
<i>Lysidice unicornis</i>						1						
<i>Lumbrineris</i> agg.		2	4	15	6	4	15	22	16	1	17	
<i>Scoletoma fragilis</i>												
<i>Lumbrineridae</i> spp. (juvenile)			3			1						
<i>Aponuphis bilineata</i>				3			2	1				
<i>Aphrodita aculeata</i>												1
<i>Glycera lapidum</i> agg.			2	3		11	11	1	2		4	
<i>Glycera</i> spp.			1									
<i>Glycera alba</i>			2	3					4			
<i>Glycera capitata</i>									2			
<i>Glycera oxycephala</i>												
<i>Glycera tridactyla</i>												
<i>Glycera unicornis</i>											1	
<i>Goniada maculata</i>	1	1		2	1			4	7	2	3	2
<i>Hesiospina aurantiaca</i>						8						
<i>Kefersteinia cirrata</i>												
<i>Nereimyra punctata</i>			1	2				1			4	
<i>Podarkeopsis capensis</i>												
<i>Psamathe fusca</i>												
<i>Hesionidae</i> spp.										1		
<i>Nephtys</i> spp. (juvenile)	2		1		2							
<i>Nephtys caeca</i>												
<i>Nephtys hombergii</i>	1	1			1					1		
<i>Nephtys incisa</i>												
<i>Nephtys kersivalensis</i>	1				2				1		1	
<i>Eunereis longissima</i>											2	
<i>Nereis zonata</i>												
<i>Platynereis dumerilii</i>							1					
<i>Nereididae</i> spp. (juvenile)										1		
<i>Pholoe</i> spp. (juvenile)												
<i>Pholoe baltica</i>			1	5	3	4				1	3	
<i>Pholoe inornata</i>			3	2		1			1		4	
<i>Eteone longa</i> agg.							1					
<i>Eulalia</i> spp.				1								
<i>Eulalia bilineata</i>				1			1					
<i>Eulalia viridis</i>			1									1
<i>Eumida bahusiensis</i>						1						
<i>Eumida ockelmanni</i>												
<i>Eumida sanguinea</i>						1	1					
<i>Nereiphylla rubiginosa</i>						3	1					
<i>Paranaitis wahlbergi</i>									1			
<i>Phyllodoce maculata</i>												
<i>Phyllodoce rosea</i>												
<i>Pseudomystides limbata</i>												
<i>Phyllodocidae</i> spp.												
<i>Gattyana cirrhosa</i>									1			
<i>Harmothoe</i> spp. (juvenile)											5	
<i>Harmothoe antilopes</i>												
<i>Harmothoe imbricata</i>					1							
<i>Harmothoe impar</i>	2	1	3			4	1				2	
<i>Lepidonotus squamatus</i>									2			
<i>Malmgrenia</i> spp.			2	1		1						
<i>Malmgrenia marphysae</i>						20	2					
<i>Malmgrenia mcintoshi</i>			1			3					1	
<i>Polynoidae</i> sp.												
<i>Pisione remota</i>						4						
<i>Sphaerodorum gracilis</i>				23		4						
<i>Eurysyllis tuberculata</i>						2						
<i>Exogone verugera</i>				1								
<i>Parexogone hebes</i>		1										
<i>Myrianida</i> spp.											1	
<i>Odontosyllis gibba</i>												
<i>Sphaerosyllis</i> spp.						4						
<i>Sphaerosyllis bulbosa</i>												
<i>Sphaerosyllis taylori</i>						2						
<i>Syllis</i> spp.					1							
<i>Syllis armillaris</i>				2								
<i>Syllis variegata</i>			1									
<i>Trypanosyllis (Trypanosyllis) coeliaca</i>						6						

Taxa	D1G1	D1G2	D1G4	D1G5	D1G6	D1G7	D1G8	D1G9	D1G10	D3G1	D3G2	D3G3
<i>Galathowenia oculata</i>	7	29	18	1	29					7	7	
<i>Owenia fusiformis</i>	1	17	26	17	12	1	6	26	24	5	31	1
<i>Sabellaria spinulosa</i>									1			
<i>Euchone</i> spp.					1							
<i>Euchone rosea</i>		1										
<i>Jasmineira caudata</i>								2				
<i>Jasmineira elegans</i>									3			
<i>Paradialychone filicaudata</i>	1		33		1							
<i>Sabellidae</i> spp. (juvenile)				3							3	
<i>Hydroides norvegica</i>			1	3			3	2	1		4	
<i>Serpula vermicularis</i>					1							
<i>Spirobranchus</i> spp.												
<i>Spirobranchus lamarcki</i>							3					
<i>Spirobranchus triqueter</i>				3		5			1			
<i>Serpulidae</i> spp. (juvenile)				2								
<i>Apistobranchnus tullbergi</i>			1	1							1	
<i>Magelona alleni</i>					2							
<i>Poecilochaetus serpens</i>							1					
<i>Aonides oxycephala</i>			1	3		1	1	3	9		4	
<i>Aonides paucibranchiata</i>						27	14		1			
<i>Dipolydora</i> spp. (juvenile)												
<i>Dipolydora caulleryi</i>												
<i>Dipolydora coeca</i>	1	1	2		1			1			2	2
<i>Laonice bahusensis</i>		1			1	3		1	4			
<i>Paraspio decorata</i>											3	
<i>Prionospio</i> spp. (juvenile)												
<i>Prionospio cirrifera</i>												
<i>Prionospio fallax</i>	1		1									
<i>Prionospio multibranchiata</i>										1		
<i>Scolecopsis</i> spp.												
<i>Spio armata</i> agg.				1								
<i>Spio</i> spp.												
<i>Spiophanes</i> spp.		1										
<i>Spiophanes kroyeri</i>	1		1		8			5	2	3		5
<i>Macrochaeta</i> spp.			1			11						
<i>Ampharete lindstroemi</i> agg.	1		1	3	2							
<i>Ampharete</i> spp.			10		2							
<i>Amphicteis gunneri</i>												1
<i>Melinna palmata</i>			2									
<i>Sosane sulcata</i>				3				26	31			
<i>Melinninae</i> spp.												
<i>Ampharetidae</i> spp. (juvenile)		1		5		1					6	1
<i>Aphelelochaeta</i> spp.					2						1	
<i>Aphelelochaeta marioni</i>												
<i>Caulleriella alata</i>												
<i>Chaetozone</i> spp.				1								
<i>Chaetozone christiei</i>			1									
<i>Chaetozone gibber</i>												
<i>Chaetozone setosa</i>		3						3		8		11
<i>Chaetozone zetlandica</i>			1				3		3		1	
<i>Cirriformia tentaculata</i>												
<i>Tharyx</i> spp.					1							
<i>Diplocirrus glaucus</i>	1	2	2	3	3				1	6	2	
<i>Diplocirrus stopbowitzi</i>								1				
<i>Flabelligera affinis</i>						2						
<i>Pherusa flabellata</i>												1
<i>Amphictene auricoma</i>	1		4	6	4		1	6		1	6	2
<i>Lagis koreni</i>												
<i>Pectinaria (Pectinaria) belgica</i>		1		1							1	
<i>Amphitrite cirrata</i>					1					1		
<i>Lanice conchilega</i> (juvenile)												
<i>Pista (Pista mirabilis)</i>												
<i>Pista cristata</i>							2			1		
<i>Pista mediterranea</i>						1						
<i>Polycirrus</i> spp.		2	3	4	3		1	7	5	1	3	2
<i>Terebellidae</i> spp.												
<i>Terebellides stroemii</i>			6	10	3						2	
<i>Trichobranchnus glacialis</i>												
<i>Dasybranchus</i> spp.												
<i>Mediomastus fragilis</i>			4	2		14	19				3	4
<i>Notomastus</i> spp.	1									1		5
<i>Chaetopterus variopedatus</i>												
<i>Clymene</i> spp.												
<i>Clymenura</i> spp.												
<i>Euclymene</i> spp.	2											
<i>Euclymene droebachiensis</i>												
<i>Euclymene lombricoides</i>										1		
<i>Euclymene oerstedii</i>												

Taxa	D1G1	D1G2	D1G4	D1G5	D1G6	D1G7	D1G8	D1G9	D1G10	D3G1	D3G2	D3G3
<i>Heteroclymene robusta</i>												
<i>Microclymene tricirrata</i>		1										
<i>Nicomache</i>												
<i>Praxillella</i> spp.					1							
<i>Praxillella affinis</i>								2	4			
<i>Praxillella gracilis</i>										1		
<i>Praxillella praetermissa</i>	1											2
<i>Rhodine loveni</i>												
<i>Maldanidae</i> spp.												
<i>Ophelina acuminata</i>			1							1		
<i>Paradoneis</i> spp.												1
<i>Paradoneis lyra</i>	1	1			1					2		
<i>Paraonides</i> spp.												
<i>Paraonidae</i> spp.							1					
<i>Polygordius</i> spp.						9						
<i>Scalibregma inflatum</i>			2	3		2	11	2	2	4	1	1
<i>Travisia forbesii</i>					1							
<i>Acidostoma obesum</i>							1					
<i>Ampelisca (aequicornis)</i>												
<i>Ampelisca</i> spp. (juvenile)								1				
<i>Ampelisca diadema</i>												
<i>Ampelisca spinipes</i>												
<i>Ampelisca tenuicornis</i>		1	1	1	3	1		4	10	2	2	1
<i>Ampelisca typica</i>					1							
<i>Ampithoe ramondi</i>												
<i>Aora typica</i>												
<i>Microdeutopus</i> spp. (female)												
<i>Microdeutopus versiculatus</i>												
<i>Aoridae</i> spp. (female)												
<i>Atylus vedlomensis</i>			3		1	1		6	3		1	
<i>Apherusa bispinosa</i>						17						
<i>Caprella fretensis</i>												
<i>Parvipalpus capillaceus</i>			1									
<i>Phtisica marina</i>			1								1	
<i>Pseudoprotella phasma</i>			36					1			1	
<i>Cheirocratus</i> spp. (female)		2	1			2						
<i>Cheirocratus sundevalli</i>					1							
<i>Corophium</i> spp.							2				1	
<i>Crassikorophium crassicorne</i>												
<i>Leptocheirus</i> spp.												
<i>Leptocheirus hirsutimanus</i>									1			
<i>Leptocheirus pectinatus</i>		1										
<i>Leptocheirus pilosus</i>												
<i>Dexamine</i> spp.												
<i>Dexamine spinosa</i>												
<i>Dexamine thea</i>												
<i>Dulichia tuberculata</i>												
<i>Jassa falcata</i>												
<i>Lepidepecreum longicornis</i>												
<i>Lysianassa ceratina</i>			1									
<i>Lysianassa plumosa</i>							4				1	
<i>Socarnes</i> spp. (juvenile)												
<i>Socarnes erythrophthalmus</i>				3		2						
<i>Animoceradocus semiserratus</i>												
<i>Othomaera othonis</i>												
<i>Abudomedilla obtusata</i>		1										
<i>Microprotopus</i> spp. (female)												
<i>Monoculodes carinatus</i>												
<i>Pontocrates altamarinus</i>											1	
<i>Westwoodilla caecula</i>	1				1							
<i>Gammaropsis</i> spp.		1			1							
<i>Gammaropsis maculata</i>											4	
<i>Megamphopus cornutus</i>							1					
<i>Photis longicaudata</i>				4		22	4		2			
<i>Harpinia antennaria</i>												
<i>Parametaphoxus fultoni</i>												
<i>Stenothoe monoculoides</i>												
<i>Amphipoda</i> spp.		2										
<i>Iphinoe serrata</i>	1											1
<i>Vaunthompsonia cristata</i>												
<i>Diastylis lucifera</i>												
<i>Diastylis rathkei</i>												
<i>Diastylis rugosa</i>		1										
<i>Diastylis tumida</i>												
<i>Hemilamprops roseus</i>												
<i>Eudorellopsis deformis</i>												
<i>Calocaris macandreae</i>												
<i>Galathea intermedia</i>							1					

Taxa	D1G1	D1G2	D1G4	D1G5	D1G6	D1G7	D1G8	D1G9	D1G10	D3G1	D3G2	D3G3
<i>Macropodia rostrata</i>							1					
<i>Eurynome</i> spp.				1								
<i>Nephrops norvegicus</i>												
<i>Anapagurus chiroacanthus</i>												
<i>Anapagurus hyndmanni</i>												
<i>Paguridae</i> spp. (juvenile)							2					
<i>Liocarcinus</i> spp.												
<i>Liocarcinus corrugatus</i>												
<i>Pisidia longicornis</i>												
<i>Processa noveli holthuisi</i>												
<i>Anomura</i> spp. (zoea larvae)						1						
<i>Brachyura</i> spp. (zoea larvae)												
<i>Anthura gracilis</i>												
<i>Conilera cylindracea</i>												
<i>Eurydice pulchra</i>												
<i>Gnathia</i> spp. (praniza)												
<i>Gnathia oxyuraea</i>			1							1		
<i>Dynamene bidentata</i>							1					
<i>Nebalia bipes</i>												
<i>Mysida</i> spp.												
<i>Akanthophoreus gracilis</i>				3								
<i>Tanaidacea</i> spp.											1	
<i>Malacostraca</i> spp. (larvae)												
<i>Ostracoda</i> spp.		1										
<i>Anoplodactylus petiolatus</i>					1							
<i>Balanus balanus</i>								5	31			
<i>Balanus crenatus</i>			14	6	14						23	
<i>Verruca stroemia</i>								3	148			
<i>Bugula</i> spp.									p			
<i>Bugulina flabellata</i>												
<i>Scrupocellaria scruposa</i>												
<i>Electra pilosa</i>												
<i>Celleporella hyalina</i>												
<i>Membranipora membranacea</i>												
<i>Crisia eburnea</i>												
<i>Tubulipora</i> spp.												
<i>Cyclostomatida</i> spp.												
<i>Chaetognatha</i>												
<i>Asciella aspersa</i>			1									
<i>Asciidae</i> spp.					2							
<i>Molgula</i> spp.					2							
<i>Botryllus</i> spp.											p	
<i>Dendrodoa grossularia</i>												
<i>Pelonia corrugata</i>	1				3							
<i>Polycarpa</i> spp.	4	7									2	
<i>Asciacea</i> spp.			2						3		21	
<i>Edwardsia</i> spp.												
<i>Edwardsia claparedii</i>	2	4	7	8	12	3	1			2		
<i>Edwardsiidae</i> spp.				1				6	3		20	4
<i>Halcampa chrysanthellum</i>												
<i>Actinaria</i> spp.							2	2				
<i>Virgularia mirabilis</i>										1		
<i>Cerianthus lloydii</i>			1	3		9	1				1	
<i>Anthozoa</i> spp.					1							
<i>Nemertesia</i> spp.			p									
<i>Nemertesia antennina</i>												
<i>Diphasia margareta</i>												
<i>Sertularia</i> spp.			p									
<i>Asterias rubens</i>												
<i>Asteriidae</i> spp. (juvenile)												
<i>Astropecten irregularis</i>						1						
<i>Porania (Porania) pulvillus</i>												
<i>Asteroidea</i> spp. (juvenile)												
<i>Antedonidae</i> spp.												
<i>Psammechinus miliaris</i>												
<i>Strongylocentrotus</i> spp.												
<i>Echinocyamus pusillus</i>			1	9		36	7	2	3		3	
<i>Echinocardium</i> spp.												
<i>Echinocardium cordatum</i>												
<i>Echinoidea</i> spp. (juvenile)				1								
<i>Labidoplax buskii</i>											2	
<i>Leptosynapta</i> spp.											2	
<i>Ocnus</i> spp.				1								
<i>Thyone</i>									2		1	
<i>Thyone fusus</i>												
<i>Amphipholis squamata</i>				2				8				
<i>Amphiura</i> spp.												4
<i>Amphiura chiajei</i>										1		1

Taxa	D1G1	D1G2	D1G4	D1G5	D1G6	D1G7	D1G8	D1G9	D1G10	D3G1	D3G2	D3G3
<i>Amphiura filiformis</i>	5	17	9	3	16				8	21	1	5
<i>Amphiuridae</i> spp. (juvenile)	4	17	8		18	16	2			4	5	
<i>Ophiocornina nigra</i>				7					2			
<i>Ophiothrix</i> spp. (juvenile)											1	
<i>Ophiothrix fragilis</i>			2									
<i>Ophiura</i> spp. (juvenile)			4	4								
<i>Ophiura albida</i>											1	
<i>Ophiurida</i> spp. (juvenile)												
<i>Ophiuroidea</i> spp. (juvenile)											2	
<i>Hiatella arctica</i>			2	2				3	3		5	
<i>Hiatella rugosa</i>												
<i>Phaxas pellucidus</i>	1	6	1		2					1		
<i>Pharidae</i> spp. (juvenile)												
<i>Acanthocardia</i> spp. (juvenile)												
<i>Parvicardium</i> spp.	1		1		4							
<i>Parvicardium minimum</i>		1		1						1		
<i>Parvicardium pinnulatum</i>	1		2	1								2
<i>Parvicardium scabrum</i>								5	2			
<i>Gari</i> spp. (juvenile)												
<i>Gari costulata</i>	2	3			4					1		
<i>Gari fervensis</i>								2				
<i>Gari tellinella</i>											1	
<i>Abra</i> spp.												20
<i>Abra alba</i>	6	40			3					37		6
<i>Abra nitida</i>	1	18						1		16		4
<i>Abra prismatica</i>												
<i>Azorinus chamasolen</i>									1			
<i>Moerella</i> spp.												
<i>Moerella donacina</i>						6			1			
<i>Moerella pygmaea</i>												
<i>Astarte sulcata</i>												
<i>Lucinoma borealis</i>										1		
<i>Thyasira</i> spp.											2	
<i>Thyasira flexuosa</i>		2		3				2	4	1		
<i>Corbula gibba</i>	2	3										
<i>Mya</i> spp.												
<i>Mya truncata</i>		2			2						7	
<i>Modiolus modiolus</i> (juvenile)			1				1		2			
<i>Musculus subpictus</i>			27									
<i>Mytilus edulis</i> (juvenile)												
<i>Mytilidae</i> spp. (juvenile)												
<i>Mytiloidea</i> spp. (juvenile)												
<i>Nuculana minuta</i>		1										3
<i>Ennucula tenuis</i>				1								
<i>Nucula</i> spp.	2											
<i>Nucula hanleyi</i>		13								5		6
<i>Nucula nitidosa</i>												
<i>Nucula nucleus</i>			4		6		1					
<i>Anomia ephippium</i>			3					1	6		12	
<i>Aequipecten opercularis</i>												
<i>Palliolium tigrinum</i>											1	
<i>Pecten maximus</i> (juvenile)			2									
<i>Pectinidae</i> spp. (juvenile)												
<i>Arctica islandica</i> (juvenile)												
<i>Arctica islandica</i>										1		
<i>Chamelea striatula</i> (juvenile)						7	2					
<i>Clausinella fasciata</i>	1	3		2	1	10	1					
<i>Dosinia</i> spp. (juvenile)			2									
<i>Dosinia exoleta</i>		6		5	10	35	3			1	2	
<i>Dosinia lupinus</i>								4	1			1
<i>Gouldia minima</i>				21		26		1	1		4	
<i>Tapes</i> spp. (juvenile)												
<i>Polititapes aureus</i>				1			1					
<i>Polititapes rhomboides</i>												
<i>Timoclea ovata</i>	3	2	1		8						4	
<i>Venerupis corrugata</i>												
<i>Venus casina</i>												1
<i>Cuspidaria cuspidata</i>												
<i>Kellia suborbicularis</i>		4										
<i>Hemilepton nitidum</i>												
<i>Lyonsia norwegica</i>									2			
<i>Kurtiella bidentata</i>	1	4		1		2	1	7	7	4	2	
<i>Tellimya ferruginosa</i>				1								
<i>Thracia</i> spp. (juvenile)			1	1			2					
<i>Thracia phaseolina</i>												
<i>Thracia villosiuscula</i>						15		1				
<i>Bivalvia</i> spp.												
<i>Mactroidea</i> spp. (juvenile)		5										

Taxa	D1G1	D1G2	D1G4	D1G5	D1G6	D1G7	D1G8	D1G9	D1G10	D3G1	D3G2	D3G3
<i>Chaetoderma nitidulum</i>			2							2	2	
<i>Caudofoveata</i> spp.									2			1
<i>Cerithiopsis tubercularis</i>											1	
<i>Turritella communis</i>		3			5					1		
<i>Akera bullata</i>												
<i>Cylichna cylindracea</i>					1						2	1
<i>Philine</i> spp.						1						
<i>Retusa</i> spp.				4								
<i>Cephalaspidea</i>												
<i>Aporrhais pespelecani</i>				1								
<i>Eatonina fulgida</i>												
<i>Melanella</i> spp.											1	
<i>Euspira nitida</i>			2	2			2	1			3	
<i>Alvania punctura</i>						1						
<i>Onoba semicostata</i>												
<i>Rissoa parva</i>												
<i>Bela nebula</i>							1					
<i>Raphitoma linearis</i>											1	
<i>Onchidoris proxima</i>												
<i>Onchidorididae</i> sp.												
<i>Emarginula fissura</i>				1								
<i>Tectura virginea</i>												
<i>Testudinalia testudinalis</i>						1						
<i>Pyramidellidae</i> spp.												
<i>Gibbula umbilicalis</i>												
<i>Trochidae</i> spp.				1								
<i>Gastropoda</i> spp.												
<i>Opisthobranchia</i> spp.					1							
<i>Callochiton septemvalvis</i>												
<i>Stenosemus albus</i>												
<i>Hanleya hanleyi</i>												
<i>Leptochiton asellus</i>				4		29						
<i>Leptochiton cancellatus</i>			4	1		15	18					
<i>Antalis entalis</i>					4							
<i>Nematoda</i> spp.				1		10		1				
<i>Nemertea</i> spp.	2	2	3	3	9	9	7		6	3	4	3
<i>Platyhelminthes</i> spp.											1	
<i>Leucosolenia</i> spp.									p			
<i>Sycon ciliatum</i>												
<i>Porifera</i> spp.												
<i>Golfingia</i> spp. (juvenile)												
<i>Golfingia (Golfingia) elongata</i>			1									
<i>Golfingia (Golfingia) vulgaris vulgaris</i>					1							
<i>Sipuncula</i> spp.											1	
<i>Phoronis</i> spp.	2	2	5	2	6	22	5	5	2	1	4	
<i>Ochrophyta</i> spp.												
<i>Chlorophyta</i> spp.						P						
<i>Rhodophyta</i> spp.						P	P					
<i>Maerl</i> spp.				p		P	P					
<i>Ammodytes</i> sp.						1						

Taxa	D3G4	D3G5	D3G6	D3G7	D3G8	D3G9	D3G10	D5G1	D5G2	D5G3	D5G4	D5G5
<i>Grania</i> spp.					18	23				1	9	
<i>Tubificoides amplivasatus</i>												
<i>Euphrosine</i> sp.						3						
<i>Protodorvillea kefersteini</i>	2			10	5	19	1			10	1	
<i>Eunice</i> spp.												
<i>Eunice pennata</i>												
<i>Leodice harassii</i>							1					
<i>Lysidice unicornis</i>			1				6			3		
<i>Lumbrineris</i> agg.	11	4	8	4	3	4		2	9		3	18
<i>Scoletoma fragilis</i>												
<i>Lumbrineridae</i> spp. (juvenile)												
<i>Aponuphis bilineata</i>	3							4	1	7		
<i>Aphrodita aculeata</i>												
<i>Glycera lapidum</i> agg.	5		2	6	18	24	1		1	2	6	3
<i>Glycera</i> spp.												
<i>Glycera alba</i>								1	2			
<i>Glycera capitata</i>												
<i>Glycera oxycephala</i>												
<i>Glycera tridactyla</i>												
<i>Glycera unicornis</i>												
<i>Goniada maculata</i>		1	1	2			1		2	1		
<i>Hesiospina aurantiaca</i>							1			8	2	
<i>Kefersteinia cirrata</i>									3			
<i>Nereimyra punctata</i>	4		8	2			8	2		9	1	4
<i>Podarkeopsis capensis</i>				9								
<i>Psamathe fusca</i>					1	1	2			6		
<i>Hesionidae</i> spp.												
<i>Nephtys</i> spp. (juvenile)								2				1
<i>Nephtys caeca</i>									1			
<i>Nephtys hombergii</i>		3						4	2			
<i>Nephtys incisa</i>												
<i>Nephtys kersivalensis</i>			1						2			
<i>Eunereis longissima</i>												
<i>Nereis zonata</i>				1								
<i>Platynereis dumerilii</i>												
<i>Nereididae</i> spp. (juvenile)												
<i>Pholoe</i> spp. (juvenile)											1	
<i>Pholoe baltica</i>	2	1		16	5	5	1			14	14	2
<i>Pholoe inornata</i>	2			22	3	1	1	2	2	11	8	
<i>Eteone longa</i> agg.						1			1	2	3	
<i>Eulalia</i> spp.												
<i>Eulalia bilineata</i>									4			1
<i>Eulalia viridis</i>	1									1	1	
<i>Eumida bahusiensis</i>												
<i>Eumida ockelmanni</i>											1	
<i>Eumida sanguinea</i>					2				1	1	2	2
<i>Nereiphylla rubiginosa</i>	2					5			2	23	5	1
<i>Paranaitis wahlbergi</i>												
<i>Phyllodoce maculata</i>						3						
<i>Phyllodoce rosea</i>												
<i>Pseudomystides limbata</i>	1											
<i>Phyllococidae</i> spp.											1	
<i>Gattyana cirrhosa</i>						1		3	1		2	
<i>Harmothoe</i> spp. (juvenile)					3							
<i>Harmothoe antilopes</i>												
<i>Harmothoe imbricata</i>												
<i>Harmothoe impar</i>	3					6			2	11	10	2
<i>Lepidonotus squamatus</i>												1
<i>Malmgrenia</i> spp.											3	3
<i>Malmgrenia marphysae</i>	7				5	10				21	3	
<i>Malmgrenia mcintoshii</i>				3	2	6	2		3	38	3	
<i>Polynoidae</i> sp.						2						
<i>Pisione remota</i>					1	3						
<i>Sphaerodorum gracilis</i>			1	3	5	6				10	9	
<i>Eurysyllis tuberculata</i>			1			2					2	
<i>Exogone verugera</i>								1				1
<i>Parexogone hebes</i>												
<i>Myrianida</i> spp.												
<i>Odontosyllis gibba</i>	1					1						
<i>Sphaerosyllis</i> spp.	2				1	30				5	6	
<i>Sphaerosyllis bulbosa</i>											3	
<i>Sphaerosyllis taylori</i>	1										6	
<i>Syllis</i> spp.										1		
<i>Syllis armillaris</i>												1
<i>Syllis variegata</i>									4			
<i>Trypanosyllis (Trypanosyllis) coeliaca</i>	2					13	2		1	6	1	
<i>Galathowenia oculata</i>		39					1	40	3			9
<i>Owenia fusiformis</i>	2	31						38	17			9

Taxa	D3G4	D3G5	D3G6	D3G7	D3G8	D3G9	D3G10	D5G1	D5G2	D5G3	D5G4	D5G5
<i>Sabellaria spinulosa</i>												
<i>Euchone</i> spp.												1
<i>Euchone rosea</i>												
<i>Jasmineira caudata</i>											1	9
<i>Jasmineira elegans</i>							3					
<i>Paradialychnone filicaudata</i>								7				
<i>Sabellidae</i> spp. (juvenile)										1		2
<i>Hydroides norvegica</i>	6		2	2	6	4	10		4	6	2	4
<i>Serpula vermicularis</i>									1		1	
<i>Spirobranchus</i> spp.					4	1				7		
<i>Spirobranchus lamarcki</i>	3				1	4			2	3	7	
<i>Spirobranchus triquetter</i>	15		4	3	12	22	8		5	24	31	
<i>Serpulidae</i> spp. (juvenile)												
<i>Apistobanchus tullbergi</i>									1			
<i>Magelona alleni</i>								3				
<i>Poecilochaetus serpens</i>									1			
<i>Aonides oxycephala</i>				2	10	3	5		1	4	4	2
<i>Aonides paucibranchiata</i>	10		1		61	21				3	27	
<i>Dipolydora</i> spp. (juvenile)								3				
<i>Dipolydora caulleryi</i>					1							1
<i>Dipolydora coeca</i>	4							1				2
<i>Laonice bahusensis</i>	4						1	6	1			6
<i>Paraspio decorata</i>		1						1				
<i>Prionospio</i> spp. (juvenile)												
<i>Prionospio cirrifera</i>								1	1			
<i>Prionospio fallax</i>		1										
<i>Prionospio multibranchiata</i>												
<i>Scolelepis</i> spp.												
<i>Spio armata</i> agg.												
<i>Spio</i> spp.												
<i>Spiophanes</i> spp.												
<i>Spiophanes kroyeri</i>	2	4							1			
<i>Macrochaeta</i> spp.	6	1			1	6	6		2	2	12	
<i>Ampharete lindstroemi</i> agg.		1										
<i>Ampharete</i> spp.		3										
<i>Amphicteis gunneri</i>												
<i>Melinna palmata</i>									1			
<i>Sosane sulcata</i>								1	3			1
<i>Melinninae</i> spp.								1				
<i>Ampharetidae</i> spp. (juvenile)									1			2
<i>Aphelochaeta</i> spp.		2										
<i>Aphelochaeta marioni</i>												1
<i>Caulleriella alata</i>			1				2					
<i>Chaetozone</i> spp.												1
<i>Chaetozone christiei</i>				5								
<i>Chaetozone gibber</i>												
<i>Chaetozone setosa</i>		8										
<i>Chaetozone zetlandica</i>							2	1	4			
<i>Cirriformia tentaculata</i>												
<i>Tharyx</i> spp.												
<i>Diplocirrus glaucus</i>		7						6	3			
<i>Diplocirrus stopbowitzi</i>												
<i>Flabelligera affinis</i>										2		
<i>Pherusa flabellata</i>												
<i>Amphictene auricoma</i>	4	8					2	2	1			4
<i>Lagis koreni</i>												
<i>Pectinaria (Pectinaria) belgica</i>		1										
<i>Amphitrite cirrata</i>									1			2
<i>Lanice conchilega</i> (juvenile)		1										
<i>Pista (Pista mirabilis)</i>				6								
<i>Pista cristata</i>		2						1	1		2	1
<i>Pista mediterranea</i>			5		3	2						
<i>Polycirrus</i> spp.	2	2			7	6	5	1		3	2	2
<i>Terebellidae</i> spp.	1											
<i>Terebellides stroemii</i>		1			1			2	2	3		3
<i>Trichobanchus glacialis</i>										8		
<i>Dasybranchus</i> spp.												
<i>Mediomastus fragilis</i>	19		4	4	39	35	2		4	20	11	
<i>Notomastus</i> spp.	2				1				2	1		
<i>Chaetopterus variopedatus</i>											1	
<i>Clymene</i> spp.					2							
<i>Clymenura</i> spp.										2		
<i>Euclymene</i> spp.												
<i>Euclymene droebachiensis</i>												
<i>Euclymene lombricoides</i>								2				
<i>Euclymene oerstedii</i>			1						5			
<i>Heteroclymene robusta</i>					1							
<i>Microclymene tricirrata</i>												

Taxa	D3G4	D3G5	D3G6	D3G7	D3G8	D3G9	D3G10	D5G1	D5G2	D5G3	D5G4	D5G5
<i>Nicomache</i>											1	
<i>Praxillella</i> spp.												
<i>Praxillella affinis</i>		3					2		2			
<i>Praxillella gracilis</i>												
<i>Praxillella praetermissa</i>		1										
<i>Rhodine loveni</i>												
<i>Maldanidae</i> spp.												
<i>Ophelina acuminata</i>												
<i>Paradoneis</i> spp.												
<i>Paradoneis lyra</i>								2	2			
<i>Paraonides</i> spp.												
<i>Paraonidae</i> spp.											1	
<i>Polygordius</i> spp.	3					2					32	
<i>Scalibregma inflatum</i>	2		19	24	7	11	18	1	3	5	5	1
<i>Travisia forbesii</i>												
<i>Acidostoma obesum</i>												
<i>Ampelisca (aequicornis)</i>							1					
<i>Ampelisca</i> spp. (juvenile)							3	1				
<i>Ampelisca diadema</i>					1							
<i>Ampelisca spinipes</i>							2					
<i>Ampelisca tenuicornis</i>		1		1				2	4			1
<i>Ampelisca typica</i>												
<i>Ampithoe ramondi</i>											1	
<i>Aora typica</i>			2	6	1					1		
<i>Microdeutopus</i> spp. (female)			5		2		3					
<i>Microdeutopus versiculatus</i>			2	2			5					
<i>Aoridae</i> spp. (female)			19									
<i>Atylus vedlomensis</i>	1			6	7		2	2	1			1
<i>Apherusa bispinosa</i>	1		5		5	1	27			1	2	
<i>Caprella fretensis</i>											1	
<i>Parvipalpus capillaceus</i>												
<i>Phtisca marina</i>					1					1		
<i>Pseudoprotella phasma</i>												5
<i>Cheirocratus</i> spp. (female)			14			2						
<i>Cheirocratus sundevalli</i>			9									
<i>Corophium</i> spp.	1		6				2			9	5	
<i>Crassikorophium crassicorne</i>				2								
<i>Leptocheirus</i> spp.						1						
<i>Leptocheirus hirsutimanus</i>	1				2	28						
<i>Leptocheirus pectinatus</i>	1						2			4	4	
<i>Leptocheirus pilosus</i>				19						2		
<i>Dexamine</i> spp.										1		
<i>Dexamine spinosa</i>			1		4	1				5	1	
<i>Dexamine thea</i>				14	2					6	4	
<i>Dulichia tuberculata</i>												
<i>Jassa falcata</i>			1									
<i>Lepidepecreum longicornis</i>			1	1			4					
<i>Lysianassa ceratina</i>												
<i>Lysianassa plumosa</i>	1		10	20		1	25			11	2	
<i>Socarnes</i> spp. (juvenile)												
<i>Socarnes erythropthalmus</i>	2		12		4	31	5					
<i>Animoceradocus semiserratus</i>	3		2	2	1	1	2			17	3	
<i>Othomaera othonis</i>							1					
<i>Abludomellita obtusata</i>												
<i>Microtopopus</i> spp. (female)						2				3	1	
<i>Monoculodes carinatus</i>					3							
<i>Pontocrates altamarinus</i>								1				
<i>Westwoodilla caecula</i>												
<i>Gammaropsis</i> spp.									1			
<i>Gammaropsis maculata</i>	1											
<i>Megamphopus cornutus</i>								1				
<i>Photis longicaudata</i>				1			1	4	4		2	
<i>Harpinia antennaria</i>								1				
<i>Parametaphoxus fultoni</i>			1			1	1				1	
<i>Stenothoe monoculoides</i>												1
<i>Amphipoda</i> spp.						1						
<i>Iphinoe serrata</i>												
<i>Vaunthompsonia cristata</i>	4		6	23		3	25				2	
<i>Diastylis lucifera</i>												
<i>Diastylis rathkei</i>								1				
<i>Diastylis rugosa</i>		1										
<i>Diastylis tumida</i>												
<i>Hemilamprops roseus</i>												
<i>Eudorellopsis deformis</i>									2			
<i>Calocaris macandreae</i>												
<i>Galathea intermedia</i>							3		1		1	
<i>Macropodia rostrata</i>												
<i>Eurynome</i> spp.												

Taxa	D3G4	D3G5	D3G6	D3G7	D3G8	D3G9	D3G10	D5G1	D5G2	D5G3	D5G4	D5G5
<i>Nephrops norvegicus</i>												
<i>Anapagurus chiroacanthus</i>								1				
<i>Anapagurus hyndmanni</i>									1	1		
Paguridae spp. (juvenile)			1			1	3					
<i>Liocarcinus</i> spp.									1		1	
<i>Liocarcinus corrugatus</i>											1	
<i>Pisidia longicornis</i>							2					
<i>Processa noveli holthuisi</i>												
<i>Anomura</i> spp. (zoea larvae)												
<i>Brachyura</i> spp. (zoea larvae)									1			
<i>Anthura gracilis</i>	1				1		3					
<i>Conilera cylindracea</i>				1	4	3				1		
<i>Eurydice pulchra</i>				2	2							
<i>Gnathia</i> spp. (praniza)												1
<i>Gnathia oxyuraea</i>								1				1
<i>Dynamene bidentata</i>					2						1	
<i>Nebalia bipes</i>				1			3					
<i>Mysida</i> spp.											2	
<i>Akanthophoreus gracilis</i>								1				
Tanaidacea spp.												
<i>Malacostraca</i> spp. (larvae)						23						
Ostracoda spp.	5	1	4	3		3	7			2		
<i>Anoplodactylus petiolatus</i>								2			4	1
<i>Balanus balanus</i>				8			3					
<i>Balanus crenatus</i>	3								41			45
<i>Verruca stroemia</i>				1					30			
<i>Bugula</i> spp.												
<i>Bugulina flabellata</i>												P
<i>Scrupocellaria scruposa</i>									P			
<i>Electra pilosa</i>			P	P		P	P			P	P	
<i>Celleporella hyalina</i>												
<i>Membranipora membranacea</i>			P		P						P	
<i>Crisia eburnea</i>									P			
<i>Tubulipora</i> spp.								P	P			P
<i>Cyclostomatida</i> spp.	P					P						P
<i>Chaetognatha</i>							1					
<i>Asciidiella aspersa</i>												
<i>Asciidiidae</i> spp.	2	1			3	3			9	10	1	11
<i>Molgula</i> spp.												
<i>Botryllus</i> spp.												
<i>Dendrodoa grossularia</i>	1											
<i>Pelonia corrugata</i>												
<i>Polycarpa</i> spp.	2	1			1							7
<i>Asciacea</i> spp.			15	2			2				3	
<i>Edwardsia</i> spp.	1						2					
<i>Edwardsia claparedii</i>		5				4		23	2		14	8
<i>Edwardsiidae</i> spp.										1		1
<i>Halcampa chrysanthellum</i>							1					
<i>Actiniaria</i> spp.										2		
<i>Virgularia mirabilis</i>												
<i>Cerianthus lloydii</i>	11		3	1		1	1	1	4	3	5	3
<i>Anthozoa</i> spp.											3	
<i>Nemertesia</i> spp.												P
<i>Nemertesia antennina</i>												
<i>Diphasia margareta</i>												
<i>Sertularia</i> spp.												
<i>Asterias rubens</i>										2		
<i>Asteriidae</i> spp. (juvenile)					1							
<i>Astropecten irregularis</i>												
<i>Porania (Porania) pulvillus</i>									1			
<i>Asteroidea</i> spp. (juvenile)				1			1					
<i>Antedonidae</i> spp.												1
<i>Psammechinus miliaris</i>	1									2		1
<i>Strongylocentrotus</i> spp.			1	1			1					1
<i>Echinocyamus pusillus</i>	14		4	11	1	3	10		3	9	11	4
<i>Echinocardium</i> spp.		1										
<i>Echinocardium cordatum</i>												
<i>Echinoidea</i> spp. (juvenile)								1				
<i>Labidoplax buskii</i>												
<i>Leptosynapta</i> spp.												
<i>Ocnus</i> spp.												
<i>Thyone</i>				2								
<i>Thyone fusus</i>												1
<i>Amphipholis squamata</i>	4		4		5		3					
<i>Amphiura</i> spp.								2				
<i>Amphiura chiajei</i>												
<i>Amphiura filiformis</i>		15						16				5
<i>Amphiuridae</i> spp. (juvenile)		18			11	31		19	2	51	27	7

Taxa	D3G4	D3G5	D3G6	D3G7	D3G8	D3G9	D3G10	D5G1	D5G2	D5G3	D5G4	D5G5
<i>Ophiocolina nigra</i>					1					28		
<i>Ophiothrix</i> spp. (juvenile)	1											
<i>Ophiothrix fragilis</i>												
<i>Ophiura</i> spp. (juvenile)					1	1						4
<i>Ophiura albida</i>	1							2				
<i>Ophiurida</i> spp. (juvenile)												
<i>Ophiuroidea</i> spp. (juvenile)			6	6				1			1	
<i>Hiatella arctica</i>							4		2	1	3	2
<i>Hiatella rugosa</i>	1						1					
<i>Phaxas pellucidus</i>		2						4				
<i>Pharidae</i> spp. (juvenile)												1
<i>Acanthocardia</i> spp. (juvenile)								1				
<i>Parvicardium</i> spp.								1		1		
<i>Parvicardium minimum</i>								1				
<i>Parvicardium pinnulatum</i>												
<i>Parvicardium scabrum</i>		7	1	1		2						
<i>Gari</i> spp. (juvenile)						1					1	
<i>Gari costulata</i>		1										
<i>Gari fervensis</i>												
<i>Gari tellinella</i>					2						4	
<i>Abra</i> spp.												
<i>Abra alba</i>		11		2				2	2		1	
<i>Abra nitida</i>								1				
<i>Abra prismatica</i>												
<i>Azorinus chamasolen</i>												
<i>Moerella</i> spp.	2											
<i>Moerella donacina</i>				7	2	1	1			1		
<i>Moerella pygmaea</i>					1				4			
<i>Astarte sulcata</i>											3	1
<i>Lucinoma borealis</i>								3	1	1		
<i>Thyasira</i> spp.	1											
<i>Thyasira flexuosa</i>		5	5	9			2	12	3			3
<i>Corbula gibba</i>								1				
<i>Mya</i> spp.												
<i>Mya truncata</i>	4				3	4		1				1
<i>Modiolus modiolus</i> (juvenile)			2	4								
<i>Musculus subpictus</i>				1								
<i>Mytilus edulis</i> (juvenile)					19	3						
<i>Mytilidae</i> spp. (juvenile)	1								2		5	
<i>Mytiloidea</i> spp. (juvenile)										6		4
<i>Nuculana minuta</i>												
<i>Ennucula tenuis</i>			1				1					
<i>Nucula</i> spp.												
<i>Nucula hanleyi</i>		9						3	2			
<i>Nucula nitidosa</i>												
<i>Nucula nucleus</i>								2	1	1		2
<i>Anomia ephippium</i>			1				3		3			
<i>Aequipecten opercularis</i>				4								
<i>Palliolium tigerinum</i>												4
<i>Pecten maximus</i> (juvenile)												
<i>Pectinidae</i> spp. (juvenile)												1
<i>Arctica islandica</i> (juvenile)		6						1				3
<i>Arctica islandica</i>												
<i>Chamelea striatula</i> (juvenile)	5							2				
<i>Clausinella fasciata</i>	8		1	2	1		1			5	6	1
<i>Dosinia</i> spp. (juvenile)		2		61		1						
<i>Dosinia exoleta</i>	7		1	6	1	10	2	6	18		37	2
<i>Dosinia lupinus</i>												
<i>Gouldia minima</i>	40		10	40	3	11	23			43	33	1
<i>Tapes</i> spp. (juvenile)					1							
<i>Polititapes aureus</i>												
<i>Polititapes rhomboides</i>										1		
<i>Timoclea ovata</i>	3								3			9
<i>Venerupis corrugata</i>	1											
<i>Venus casina</i>												
<i>Cuspidaria cuspidata</i>		1							P			
<i>Kellia suborbicularis</i>												
<i>Hemilepton nitidum</i>							6					
<i>Lyonsia norwegica</i>												
<i>Kurtiella bidentata</i>		2	5	4	9	7		1		1	12	
<i>Tellimya ferruginosa</i>												
<i>Thracia</i> spp. (juvenile)											1	
<i>Thracia phaseolina</i>								7				
<i>Thracia villosiuscula</i>	9				6	23				6	19	
<i>Bivalvia</i> spp.												
<i>Mactroidea</i> spp. (juvenile)												
<i>Chaetoderma nitidulum</i>		2				2		3				1
<i>Caudofoveata</i> spp.												

Taxa	D3G4	D3G5	D3G6	D3G7	D3G8	D3G9	D3G10	D5G1	D5G2	D5G3	D5G4	D5G5
<i>Cerithiopsis tubercularis</i>												
<i>Turritella communis</i>								5				
<i>Akera bullata</i>										24		
<i>Cylichna cylindracea</i>						1		1	3	2	1	
<i>Philine</i> spp.			2	14							1	
<i>Retusa</i> spp.	1											
<i>Cephalaspidea</i>											1	
<i>Aporrhais pespelecani</i>												
<i>Eatonina fulgida</i>											2	
<i>Melanella</i> spp.												
<i>Euspira nitida</i>	2		2	2	3	1	2	1	1			1
<i>Alvania punctura</i>										6		
<i>Onoba semicostata</i>			2						1	1		
<i>Rissoa parva</i>									1	2		
<i>Bela nebula</i>												
<i>Raphitoma linearis</i>					1							
<i>Onchidoris proxima</i>												2
<i>Onchidorididae</i> sp.			1									
<i>Emarginula fissura</i>												
<i>Tectura virginea</i>			11	3			8					
<i>Testudinalia testudinalis</i>	3				10	1				21	11	
<i>Pyramidellidae</i> spp.												2
<i>Gibbula umbilicalis</i>				1								
<i>Trochidae</i> spp.												
<i>Gastropoda</i> spp.					1	1				19	5	
<i>Opisthobranchia</i> spp.												
<i>Callochiton septemvalvis</i>	2									5	1	
<i>Stenosemus albus</i>					1					2		
<i>Hanleya hanleyi</i>										2		
<i>Leptochiton asellus</i>	34		7	9	6	3	16		3	38	12	5
<i>Leptochiton cancellatus</i>	13			4	1	8	5			30	14	
<i>Antalis entalis</i>		1										
<i>Nematoda</i> spp.	4		1		57	257	1		2	63	96	3
<i>Nemertea</i> spp.	5	7	4		5	7	4	1	3	20	2	4
<i>Platyhelminthes</i> spp.	2									1		
<i>Leucosolenia</i> spp.				P								
<i>Sycon ciliatum</i>							P		1	2		
<i>Porifera</i> spp.	P										P	
<i>Golfingia</i> spp. (juvenile)										1		
<i>Golfingia (Golfingia) elongata</i>												
<i>Golfingia (Golfingia) vulgaris vulgaris</i>	1	1				1					1	3
<i>Sipuncula</i> spp.												
<i>Phoronis</i> spp.		1						2	3		2	2
<i>Ochrophyta</i> spp.			P	P		P	P					
<i>Chlorophyta</i> spp.	P						P			P	P	
<i>Rhodophyta</i> spp.	P		P	P	P	P	P			P	P	
<i>Maerl</i> spp.	P			P	P	P	P			P	P	
<i>Ammodytes</i> sp.												

Taxa	D5G6	D5G7	T1G1	T1G2	T1G3	T1G4	T1G5	T1G6	T1G7	T1G8	T1G9	T1G10
<i>Grania</i> spp.												
<i>Tubificoides amplivasatus</i>				1								
<i>Euphrosine</i> sp.												
<i>Protodorvillea kefersteini</i>												
<i>Eunice</i> spp.												
<i>Eunice pennata</i>		1										
<i>Leodice harassii</i>												
<i>Lysidice unicornis</i>												
<i>Lumbrineris</i> agg.	2	4	2									3
<i>Scoletoma fragilis</i>					1	1	1	1	3		1	
<i>Lumbrineridae</i> spp. (juvenile)												
<i>Aponuphis bilineata</i>												
<i>Aphrodita aculeata</i>											1	
<i>Glycera lapidum</i> agg.	1											
<i>Glycera</i> spp.	1											
<i>Glycera alba</i>		3				1	1	2			1	
<i>Glycera capitata</i>												
<i>Glycera oxycephala</i>									1			
<i>Glycera tridactyla</i>												1
<i>Glycera unicornis</i>				2		1	1	1		2	1	
<i>Goniada maculata</i>		2								2		
<i>Hesiospina aurantiaca</i>												
<i>Kefersteinia cirrata</i>												
<i>Nereimyra punctata</i>										4		
<i>Podarkeopsis capensis</i>												
<i>Psamathe fusca</i>												
<i>Hesionidae</i> spp.												
<i>Nephtys</i> spp. (juvenile)												
<i>Nephtys caeca</i>								2				
<i>Nephtys hombergii</i>	1									5		
<i>Nephtys incisa</i>						2	5		2	2	1	3
<i>Nephtys kersivalensis</i>	1			4	1							1
<i>Eunereis longissima</i>	1											
<i>Nereis zonata</i>												
<i>Platynereis dumerilii</i>												
<i>Nereididae</i> spp. (juvenile)												
<i>Pholoe</i> spp. (juvenile)												
<i>Pholoe baltica</i>										3		
<i>Pholoe inornata</i>												
<i>Eteone longa</i> agg.										1		
<i>Eulalia</i> spp.												
<i>Eulalia bilineata</i>												
<i>Eulalia viridis</i>												
<i>Eumida bahusiensis</i>												
<i>Eumida ockelmanni</i>												
<i>Eumida sanguinea</i>												
<i>Nereiphylla rubiginosa</i>										1		
<i>Paranaitis wahlbergi</i>												
<i>Phyllococe maculata</i>												
<i>Phyllococe rosea</i>											1	
<i>Pseudomystides limbata</i>												
<i>Phyllococidae</i> spp.												
<i>Gattyana cirrhosa</i>								1		1		
<i>Harmothoe</i> spp. (juvenile)										1		
<i>Harmothoe antilopes</i>				1						1		
<i>Harmothoe imbricata</i>												
<i>Harmothoe impar</i>		2		3								
<i>Lepidonotus squamatus</i>												
<i>Malmgrenia</i> spp.												
<i>Malmgrenia marphysae</i>												
<i>Malmgrenia mcintoshii</i>												
<i>Polynoidae</i> sp.												
<i>Pisone remota</i>												
<i>Sphaerodorum gracilis</i>												
<i>Euryssyllis tuberculata</i>												
<i>Exogone verugera</i>		1										
<i>Parexogone hebes</i>												
<i>Myrianida</i> spp.												
<i>Odontosyllis gibba</i>												
<i>Sphaerosyllis</i> spp.												
<i>Sphaerosyllis bulbosa</i>												
<i>Sphaerosyllis taylori</i>												
<i>Syllis</i> spp.												
<i>Syllis armillaris</i>		1								1		
<i>Syllis variegata</i>												
<i>Trypanosyllis (Trypanosyllis) coeliaca</i>												
<i>Galathowenia oculata</i>	5	16						11	1	2		
<i>Owenia fusiformis</i>	1	15								1		

Taxa	D5G6	D5G7	T1G1	T1G2	T1G3	T1G4	T1G5	T1G6	T1G7	T1G8	T1G9	T1G10
<i>Sabellaria spinulosa</i>												
<i>Euchone</i> spp.												
<i>Euchone rosea</i>												
<i>Jasmineira caudata</i>		1									1	
<i>Jasmineira elegans</i>												
<i>Paradialychone filicaudata</i>												
<i>Sabellidae</i> spp. (juvenile)												
<i>Hydroides norvegica</i>										4		
<i>Serpula vermicularis</i>												
<i>Spirobranchus</i> spp.												
<i>Spirobranchus lamarki</i>											3	
<i>Spirobranchus triqueter</i>										27		
<i>Serpulidae</i> spp. (juvenile)												
<i>Apistobanchus tullbergi</i>												
<i>Magelona alleni</i>												
<i>Poecilochaetus serpens</i>												
<i>Aonides oxycephala</i>												
<i>Aonides paucibranchiata</i>												
<i>Dipolydora</i> spp. (juvenile)												
<i>Dipolydora caulleryi</i>												
<i>Dipolydora coeca</i>	1							3	1	1		
<i>Laonice bahusiensis</i>												
<i>Paraspio decorata</i>												
<i>Prionospio</i> spp. (juvenile)	1											
<i>Prionospio cirrifera</i>				1								
<i>Prionospio fallax</i>		2										
<i>Prionospio multibranchiata</i>			1	3			6					
<i>Scolelepis</i> spp.	1											
<i>Spio armata</i> agg.												
<i>Spio</i> spp.		6										
<i>Spiophanes</i> spp.												
<i>Spiophanes kroyeri</i>	4	6	4	2	1	1	2	7	8	2	16	2
<i>Macrochaeta</i> spp.												
<i>Ampharete lindstroemi</i> agg.				1					2	3		
<i>Ampharete</i> spp.												
<i>Amphicteis gunneri</i>												1
<i>Melinna palmata</i>												
<i>Sosane sulcata</i>		5									1	
<i>Melinninae</i> spp.												
<i>Ampharetidae</i> spp. (juvenile)		4						1		1		
<i>Aphelochaeta</i> spp.												
<i>Aphelochaeta marioni</i>												
<i>Caulleriella alata</i>												
<i>Chaetozone</i> spp.									1		2	
<i>Chaetozone christiei</i>	6	6					1					
<i>Chaetozone gibber</i>	1								1			
<i>Chaetozone setosa</i>	1		5	2		1		1		4	1	
<i>Chaetozone zetlandica</i>					1			1				1
<i>Cirriformia tentaculata</i>		1										
<i>Tharyx</i> spp.												
<i>Diplocirrus glaucus</i>	4		3			1						1
<i>Diplocirrus stoppowitzi</i>												
<i>Flabelligera affinis</i>												
<i>Pherusa flabellata</i>												
<i>Amphictene auricoma</i>	4	4								7	2	
<i>Lagis koreni</i>			1									
<i>Pectinaria (Pectinaria) belgica</i>	1											
<i>Amphitrite cirrata</i>								1		1		
<i>Lanice conchilega</i> (juvenile)												
<i>Pista (Pista mirabilis)</i>												
<i>Pista cristata</i>											1	
<i>Pista mediterranea</i>												
<i>Polycirrus</i> spp.		1						1	1			1
<i>Terebellidae</i> spp.												
<i>Terebellides stroemii</i>		4						1				
<i>Trichobanchus glacialis</i>												
<i>Dasybranchus</i> spp.			8					9		1	7	2
<i>Mediomastus fragilis</i>				8	1	2	2		4			
<i>Notomastus</i> spp.	3								6	2		2
<i>Chaetopterus variopedatus</i>												
<i>Clymene</i> spp.												
<i>Clymenura</i> spp.												
<i>Euclymene</i> spp.												
<i>Euclymene droebachiensis</i>											1	
<i>Euclymene lombricoides</i>										1		
<i>Euclymene oerstedii</i>												
<i>Heteroclymene robusta</i>												
<i>Microclymene tricirrata</i>												

Taxa	D5G6	D5G7	T1G1	T1G2	T1G3	T1G4	T1G5	T1G6	T1G7	T1G8	T1G9	T1G10
<i>Nicomache</i>												
<i>Praxillella</i> spp.												
<i>Praxillella affinis</i>												1
<i>Praxillella gracilis</i>												
<i>Praxillella praetermissa</i>								1				
<i>Rhodine loveni</i>			2									
<i>Maldanidae</i> spp.		2							1			
<i>Ophelina acuminata</i>												
<i>Paradoneis</i> spp.												
<i>Paradoneis lyra</i>												
<i>Paraonides</i> spp.		1										
<i>Paraonidae</i> spp.								1				
<i>Polygordius</i> spp.												
<i>Scalibregma inflatum</i>	1		3					1	1			
<i>Travisia forbesii</i>												
<i>Acidostoma obesum</i>												
<i>Ampelisca (aequicornis)</i>												
<i>Ampelisca</i> spp. (juvenile)												
<i>Ampelisca diadema</i>												
<i>Ampelisca spinipes</i>												
<i>Ampelisca tenuicornis</i>												
<i>Ampelisca typica</i>												
<i>Ampithoe ramondi</i>												
<i>Aora typica</i>												
<i>Microdeutopus</i> spp. (female)											1	
<i>Microdeutopus versiculatus</i>												
<i>Aoridae</i> spp. (female)												
<i>Atylus vedlomensis</i>												
<i>Apherusa bispinosa</i>												
<i>Caprella fretensis</i>												
<i>Parvipalpus capillaceus</i>												
<i>Phtisica marina</i>												
<i>Pseudoprotella phasma</i>		4										
<i>Cheirocratus</i> spp. (female)												
<i>Cheirocratus sundevalli</i>												
<i>Corophium</i> spp.												
<i>Crassikorophium crassicorne</i>												
<i>Leptocheirus</i> spp.												
<i>Leptocheirus hirsutimanus</i>												
<i>Leptocheirus pectinatus</i>										1		
<i>Leptocheirus pilosus</i>												
<i>Dexamine</i> spp.												
<i>Dexamine spinosa</i>												
<i>Dexamine thea</i>												
<i>Dulichia tuberculata</i>		2										
<i>Jassa falcata</i>												
<i>Lepidepcreum longicornis</i>												
<i>Lysianassa ceratina</i>												
<i>Lysianassa plumosa</i>												
<i>Socarnes</i> spp. (juvenile)		1										
<i>Socarnes erythropthalmus</i>												
<i>Animoceradocus semiserratus</i>												
<i>Othomaera othonis</i>												
<i>Abludomellita obtusata</i>												
<i>Microprotopus</i> spp. (female)												
<i>Monoculodes carinatus</i>												
<i>Pontocrates altamarinus</i>												
<i>Westwoodilla caecula</i>	1	4										
<i>Gammaropsis</i> spp.												
<i>Gammaropsis maculata</i>		3										
<i>Megamphopus cornutus</i>												
<i>Photis longicaudata</i>												
<i>Harpinia antennaria</i>												
<i>Parametaphoxus fultoni</i>												
<i>Stenothoe monoculoides</i>												
<i>Amphipoda</i> spp.												
<i>Iphinoe serrata</i>												
<i>Vaunthompsonia cristata</i>		1										
<i>Diastylis lucifera</i>		2										
<i>Diastylis rathkei</i>												
<i>Diastylis rugosa</i>	1	1										
<i>Diastylis tumida</i>		1										
<i>Hemilamprops roseus</i>		1										
<i>Eudorellopsis deformis</i>												
<i>Calocaris macandreae</i>			1	1								
<i>Galathea intermedia</i>												
<i>Macropodia rostrata</i>												
<i>Eurynome</i> spp.												

Taxa	D5G6	D5G7	T1G1	T1G2	T1G3	T1G4	T1G5	T1G6	T1G7	T1G8	T1G9	T1G10
<i>Nephrops norvegicus</i>			1				2			1		
<i>Anapagurus chiroacanthus</i>												
<i>Anapagurus hyndmanni</i>		1										
Paguridae spp. (juvenile)												
<i>Liocarcinus</i> spp.												
<i>Liocarcinus corrugatus</i>												
<i>Pisidia longicornis</i>												
<i>Processa noveli holthuisi</i>					1							
<i>Anomura</i> spp. (zoea larvae)												
<i>Brachyura</i> spp. (zoea larvae)												
<i>Anthura gracilis</i>										1		
<i>Conilera cylindracea</i>												
<i>Eurydice pulchra</i>	1											
<i>Gnathia</i> spp. (praniza)												
<i>Gnathia oxyurea</i>												
<i>Dynamene bidentata</i>												
<i>Nebalia bipes</i>												
<i>Mysida</i> spp.												
<i>Akanthophoreus gracilis</i>												
Tanaidacea spp.												
Malacostraca spp. (larvae)												
Ostracoda spp.												
<i>Anoplodactylus petiolatus</i>												
<i>Balanus balanus</i>												
<i>Balanus crenatus</i>												
<i>Verruca stroemia</i>												
<i>Bugula</i> spp.												
<i>Bugulina flabellata</i>												
<i>Scrupocellaria scruposa</i>												
<i>Electra pilosa</i>												
<i>Celleporella hyalina</i>					p							
<i>Membranipora membranacea</i>												
<i>Crisia eburnea</i>												
<i>Tubulipora</i> spp.												
Cyclostomatida spp.												
<i>Chaetognatha</i>												
<i>Asciella aspersa</i>												
Asciidiidae spp.												
<i>Molgula</i> spp.												
<i>Botryllus</i> spp.												
<i>Dendrodoa grossularia</i>												
<i>Pelonia corrugata</i>												
<i>Polycarpa</i> spp.		6										
Asciacea spp.		2								3		
<i>Edwardsia</i> spp.												
<i>Edwardsia claparedii</i>												
Edwardsiidae spp.		1										
<i>Halcapa chrysanthellum</i>												
<i>Actinaria</i> spp.											1	
<i>Virgularia mirabilis</i>												
<i>Cerianthus lloydii</i>												
Anthozoa spp.												
<i>Nemertesia</i> spp.												
<i>Nemertesia antennina</i>		p										
<i>Diphasia margareta</i>		p										
<i>Sertularella</i> spp.												
<i>Asterias rubens</i>												
Asteriidae spp. (juvenile)												
<i>Astropecten irregularis</i>												
<i>Porania (Porania) pulvillus</i>												
Asteroidea spp. (juvenile)												
Antedonidae spp.												
<i>Psammechinus miliaris</i>												
<i>Strongylocentrotus</i> spp.												
<i>Echinocyamus pusillus</i>												
<i>Echinocardium</i> spp.												
<i>Echinocardium cordatum</i>	1											
Echinoidea spp. (juvenile)												
<i>Labidoplax buskii</i>												
<i>Leptosynapta</i> spp.												
<i>Ocnus</i> spp.												
<i>Thyone</i>												
<i>Thyone fusus</i>												
<i>Amphipholis squamata</i>			1									3
<i>Amphiura</i> spp.										1		
<i>Amphiura chiajei</i>				1								
<i>Amphiura filiformis</i>	1	7										
Amphiuridae spp. (juvenile)	4	20										

Taxa	D5G6	D5G7	T1G1	T1G2	T1G3	T1G4	T1G5	T1G6	T1G7	T1G8	T1G9	T1G10
<i>Ophiocovina nigra</i>												
<i>Ophiothrix</i> spp. (juvenile)										1		
<i>Ophiothrix fragilis</i>												
<i>Ophiura</i> spp. (juvenile)												
<i>Ophiura albida</i>												
<i>Ophiurida</i> spp. (juvenile)										6		
<i>Ophiuroidea</i> spp. (juvenile)												
<i>Hiatella arctica</i>												
<i>Hiatella rugosa</i>												
<i>Phaxas pellucidus</i>										1		
<i>Pharidae</i> spp. (juvenile)												
<i>Acanthocardia</i> spp. (juvenile)	3											
<i>Parvicardium</i> spp.											1	
<i>Parvicardium minimum</i>												
<i>Parvicardium pinnulatum</i>												
<i>Parvicardium scabrum</i>		2										
<i>Gari</i> spp. (juvenile)												
<i>Gari costulata</i>												
<i>Gari fervensis</i>												
<i>Gari tellinella</i>												
<i>Abra</i> spp.			4									8
<i>Abra alba</i>	63	4	29	2	11	4	9	29	21	73	20	2
<i>Abra nitida</i>	4		12					9		5	17	5
<i>Abra prismatica</i>							1					
<i>Azorinus chamasolen</i>												
<i>Moerella</i> spp.												
<i>Moerella donacina</i>												
<i>Moerella pygmaea</i>												
<i>Astarte sulcata</i>											1	
<i>Lucinoma borealis</i>									1			
<i>Thyasira</i> spp.												
<i>Thyasira flexuosa</i>	7	1	1				1				1	
<i>Corbula gibba</i>		3							1	18	2	
<i>Mya</i> spp.	1											
<i>Mya truncata</i>												
<i>Modiolus modiolus</i> (juvenile)												
<i>Musculus subpictus</i>												
<i>Mytilus edulis</i> (juvenile)												
<i>Mytilidae</i> spp. (juvenile)												
<i>Mytiloidea</i> spp. (juvenile)												
<i>Nuculana minuta</i>		3								1		
<i>Ennucula tenuis</i>		6	64					2		10	16	14
<i>Nucula</i> spp.												
<i>Nucula hanleyi</i>				2	3							
<i>Nucula nitidosa</i>			1									1
<i>Nucula nucleus</i>	56					3	13		7	4	6	
<i>Anomia ephippium</i>												
<i>Aequipecten opercularis</i>												
<i>Palliolium tigerinum</i>												
<i>Pecten maximus</i> (juvenile)												
<i>Pectinidae</i> spp. (juvenile)												
<i>Arctica islandica</i> (juvenile)		4										
<i>Arctica islandica</i>												
<i>Chamelea striatula</i> (juvenile)												
<i>Clausinella fasciata</i>												
<i>Dosinia</i> spp. (juvenile)												
<i>Dosinia exoleta</i>	1											
<i>Dosinia lupinus</i>	1											
<i>Gouldia minima</i>		1						1				
<i>Tapes</i> spp. (juvenile)												
<i>Polititapes aureus</i>												
<i>Polititapes rhomboides</i>												
<i>Timoclea ovata</i>		4								1		
<i>Venerupis corrugata</i>												
<i>Venus casina</i>												
<i>Cuspidaria cuspidata</i>												
<i>Kellia suborbicularis</i>												
<i>Hemilepton nitidum</i>												
<i>Lyonsia norwegica</i>												
<i>Kurtiella bidentata</i>		8										
<i>Tellimya ferruginosa</i>	1											
<i>Thracia</i> spp. (juvenile)												
<i>Thracia phaseolina</i>												
<i>Thracia villosiuscula</i>												
<i>Bivalvia</i> spp.				1								
<i>Mactroidea</i> spp. (juvenile)												
<i>Chaetoderma nitidulum</i>	3	1		2	2	1			1		1	
<i>Caudofoveata</i> spp.												

Taxa	D5G6	D5G7	T1G1	T1G2	T1G3	T1G4	T1G5	T1G6	T1G7	T1G8	T1G9	T1G10
<i>Cerithiopsis tubercularis</i>												
<i>Turritella communis</i>	1								8	1	13	9
<i>Akera bullata</i>												
<i>Cylichna cylindracea</i>	1											
<i>Philine</i> spp.												
<i>Retusa</i> spp.												
<i>Cephalaspidea</i>												
<i>Aporrhais pespelecani</i>												
<i>Eatonina fulgida</i>												
<i>Melanella</i> spp.												
<i>Euspira nitida</i>		2										
<i>Alvania punctura</i>												
<i>Onoba semicostata</i>												
<i>Rissoa parva</i>												
<i>Bela nebula</i>												
<i>Raphitoma linearis</i>												
<i>Onchidoris proxima</i>												
<i>Onchidorididae</i> sp.												
<i>Emarginula fissura</i>												
<i>Tectura virginea</i>												
<i>Testudinaria testudinalis</i>										1		
<i>Pyramidellidae</i> spp.												
<i>Gibbula umbilicalis</i>												
<i>Trochidae</i> spp.												
<i>Gastropoda</i> spp.												
<i>Opisthobranchia</i> spp.												
<i>Callochiton septemvalvis</i>												
<i>Stenosemus albus</i>												
<i>Hanleya hanleyi</i>												
<i>Leptochiton asellus</i>										1		
<i>Leptochiton cancellatus</i>												
<i>Antalis entalis</i>												
<i>Nematoda</i> spp.										1		
<i>Nemertea</i> spp.	3	8						1		7		
<i>Platyhelminthes</i> spp.					1							
<i>Leucosolenia</i> spp.												
<i>Sycon ciliatum</i>												
<i>Porifera</i> spp.												
<i>Golfingia</i> spp. (juvenile)												
<i>Golfingia</i> (<i>Golfingia</i>) <i>elongata</i>												
<i>Golfingia</i> (<i>Golfingia</i>) <i>vulgaris vulgaris</i>		2										
<i>Sipuncula</i> spp.												
<i>Phoronis</i> spp.		2										
<i>Ochrophyta</i> spp.												
<i>Chlorophyta</i> spp.												
<i>Rhodophyta</i> spp.												
<i>Maerl</i> spp.												
<i>Ammodytes</i> sp.												

ANNEX 5: SPECIES DATA - LOCH FYNE GRAB SAMPLES

Taxa	FG-03	FG-04	FG-05	FG-06	FG-09	FG-10	FG-23	FG-24	FG-25
<i>Grania</i> sp.					3				
<i>Limnodrioides scandinavicus</i>									
<i>Protodorvillea kefersteini</i>		1	2	1	5				
<i>Lysidice unicornis</i>									
<i>Lumbrineris</i> agg.	1	4	1		9	4	4		6
<i>Aphrodita aculeata</i>		1					1		
<i>Glycera alba</i>									
<i>Glycera lapidum</i> agg.		5			5		4	1	4
<i>Glycera unicornis</i>				2					
<i>Goniada maculata</i>		1	3	3			4		
<i>Gyptis propinqua</i>									
<i>Nereimyra punctata</i>			4		1	111	1	96	20
<i>Oxydromus flexuosus</i>									
<i>Psamathe fusca</i>				2		17			2
<i>Nephtys hombergii</i>		1							
<i>Nephtys incisa</i>									
<i>Nephtys kersivalensis</i>			4						
<i>Nereis zonata</i>									1
<i>Nereididae</i> sp. (juvenile)									
<i>Pholoe baltica</i>				2		4	4	7	4
<i>Pholoe inornata</i>				5		67	4	20	2
<i>Eteone flava</i>					1				
<i>Eulalia bilineata</i>				1					
<i>Eulalia viridis</i>					3		1		
<i>Eumida bahusiensis</i>									2
<i>Eumida sanguinea</i>	1				1				
<i>Nereiphylla rubiginosa</i>							2		
<i>Notophyllum foliosum</i>				1			1		
<i>Phyllodoce longipes</i> cf.		1							
<i>Phyllodoce</i> sp.									
<i>Pseudomystides limbata</i>					1				
<i>Ancistrosyllis groenlandica</i>									
<i>Pilargis verrucosa</i>									
<i>Acanthicolepis asperrima</i>									
<i>Subadyte pellucida</i>									
<i>Alentia gelatinosa</i>									1
<i>Antinoella finmarchica</i>									
<i>Harmothoe</i> spp.							7	7	11
<i>Lepidonotus squamatus</i>			3			3		7	2
<i>Malmgrenia marphysae</i>			2	1			1		
<i>Malmgrenia mcintoshi</i>			3				4		
<i>Malmgrenia</i> sp.							1		
<i>Polynoinae</i> (<i>Neopolynoe paradoxa</i>)			3						
<i>Sphaerodorum gracilis</i>		4	1	1	18	18	6	15	1
<i>Exogone verugera</i>							1		
<i>Pionosyllis</i> sp.									
<i>Sphaerosyllis taylori</i>					1				
<i>Sphaerosyllis</i> spp.				1					
<i>Syllis armillaris</i>	1			2	1			3	
<i>Syllis hyalina</i>		1							
<i>Syllis</i> (<i>Syllis fasciata</i>)									1
<i>Owenia fusiformis</i>		1	2	3	3				
<i>Euchone rubrocincta</i>							1		
<i>Jasmineira caudata</i>				1					1
<i>Jasmineira elegans</i>				4			2		
<i>Laonome kroyeri</i>			1						
<i>Parasabella torulis</i>							1		
<i>Sabellinae</i> (<i>Notaulax rectangulata</i>)									
<i>Sabellidae</i> sp.									
<i>Hydroides norvegica</i>			3				2		
<i>Hydroides</i> sp.			1						
<i>Serpula vermicularis</i>					1				
<i>Spirobranchus lamarcki</i>							5		1
<i>Spirobranchus triqueter</i>	6	19	76	2	6	11	61	5	1
<i>Spirobranchus</i> spp.			7				5		
<i>Aonides oxycephala</i>			2	1	3	12		3	
<i>Aonides paucibranchiata</i>				2	1		2		2
<i>Dipolydora caulleryi</i>			1						
<i>Dipolydora coeca</i>	4			1			2		
<i>Malacoceros fuliginosus</i>									1
<i>Prionospio cirrifera</i>					1				
<i>Prionospio multibranchiata</i> cf.									1
<i>Pseudopolydora paucibranchiata</i> cf.							8		
<i>Pseudopolydora pulchra</i>				58					
<i>Spiophanes kroyeri</i>									
<i>Macrochaeta</i>			5		2		4		

Taxa	FG-03	FG-04	FG-05	FG-06	FG-09	FG-10	FG-23	FG-24	FG-25
<i>Melinna elisabethae</i>								1	
<i>Melinna palmata</i>									
<i>Sosane sulcata</i>					1				
Ampharetidae sp. (juvenile)							1		
<i>Aphelochaeta marioni</i>									
<i>Chaetozone setosa</i>									
<i>Chaetozone zetlandica</i>			1				2		4
<i>Chaetozone</i> sp. (juvenile)				1					
<i>Cirratulus cirratus</i>							3		
<i>Cirratulus</i> sp. (juvenile)									1
<i>Cirratulus</i> (sp. A)									
<i>Monticellina dorsobranchialis</i>			1						
<i>Tharyx killariensis</i>									
<i>Diplocirrus glaucus</i>		1		1			1		
<i>Flabelligera affinis</i>					1	8		13	
<i>Pherusa flabellata</i>		1	1			12		2	1
<i>Pherusa plumosa</i>									
<i>Amphictene auricoma</i>									2
<i>Pectinaria (Pectinaria) belgica</i>									
<i>Amphitrite cirrata</i>									
<i>Eupolymnia nesidensis</i>									1
<i>Pista cristata</i>				1					
<i>Pista mediterranea</i>			2	1					
<i>Polycirrus</i> spp.	1	1	10		8	9	5	10	4
<i>Terebellides stroemii</i>		4		1		4	4		
<i>Trichobranchus roseus</i>								2	
<i>Terebellomorpha</i> spp. (juvenile)									
<i>Mediomastus fragilis</i>				4	14		8		
<i>Notomastus</i> spp.		2		1					
<i>Clymenura</i> sp.					1				
<i>Praxillella affinis</i>									1
<i>Praxillella gracilis</i>									
<i>Ophelina acuminata</i>							1		
<i>Scoloplos (Scoloplos) armiger</i>			1						
<i>Paradoneis lyra</i>						1			
<i>Paraonides</i> spp.									4
<i>Paraonidae</i> sp.							1		
<i>Polyphysia crassa</i>						1			
<i>Scalibregma inflatum</i>			3		1	2	7	1	1
<i>Acidostoma obesum</i>	2						1		
<i>Ampelisca diadema</i>									
<i>Ampelisca spinipes</i>									
<i>Ampelisca tenuicornis</i>	7			6			1		
<i>Ampelisca typica</i>			3						
<i>Aora</i> sp. (female)						1			
<i>Atylus vedlomensis</i>			1						
<i>Apherusa bispinosa</i>	9								
<i>Phtisica marina</i>			3						
<i>Pseudoprotella phasma</i>	1								
<i>Cheirocratus sundevalli</i>	6								
<i>Cheirocratus</i> sp.									
<i>Corophium</i> spp.	1		1						1
<i>Leptocheirus pectinatus</i>	5								
<i>Leptocheirus pilosus</i>			1						
<i>Dexamine spinosa</i>				3	2		1		
<i>Iphimedia minuta</i>	1								
<i>Lepidepcreum longicornis</i>			2						
<i>Lysianassa plumosa</i>	7	8	13				4		
<i>Animocera docus semiserratus</i>		1							
<i>Monoculodes</i> sp.	1								
<i>Synchelidium haplocheles</i>				1					
<i>Gammaropsis maculata</i>	2			2					2
<i>Gammaropsis</i> spp.				3					
<i>Photis longicaudata</i>	27	1	7	1			3		
<i>Harpinia crenulata</i>	2								
<i>Stenothoe marina</i>									
<i>Bodotria arenosa</i>		1		1					
<i>Vaunthompsonia cristata</i>	24	2	6				1		
<i>Diastylis laevis</i>				1					
<i>Eudorella emarginata</i>									
<i>Eudorella</i> sp.	1								
<i>Galathea intermedia</i>	1		2				1		
<i>Inachus dorsettensis</i>			1						
<i>Inachinae</i> sp. (juvenile)				1					
<i>Anapagurus hyndmanni</i>					1				
<i>Pandalina brevis</i>	1								
<i>Pisidia longicornis</i>			1						
<i>Eurydice affinis</i>									1

Taxa	FG-03	FG-04	FG-05	FG-06	FG-09	FG-10	FG-23	FG-24	FG-25
<i>Uromunna petiti</i>									
<i>Cymodoce truncata</i>	4		4				1		
<i>Akanthophoreus gracilis</i>	1								
Ostracoda spp.	3							1	1
<i>Balanus balanus</i>		5					3		
<i>Balanus crenatus</i>				2					
<i>Verruca stroemia</i>									
<i>Microporella</i> spp.		p							
<i>Disporella hispida</i>		p							
<i>Tubulipora</i> spp.	p						p		
<i>Myoxocephalus scorpius</i>							1		
<i>Polycarpa</i> sp.							1		
Asciacea sp.					1				
<i>Edwardsia claparedii</i>	1						3		
<i>Cereus pedunculatus</i>	1								
<i>Virgularia mirabilis</i>									
<i>Cerianthus lloydii</i>	1			1	1		4		
<i>Sertularella gaudichaudi</i>									
<i>Asterias rubens</i>			1						
<i>Henricia oculata</i>							1		
<i>Strongylocentrotus droebachiensis</i>					1		1		
<i>Strongylocentrotus (Strongylocentrotus pallidus)</i>								1	
<i>Echinocyamus pusillus</i>	5			1	2		5		
<i>Labidoplax media</i>				3			1		
<i>Leptosynapta bergensis</i>		1							2
<i>Leptosynapta inhaerens</i>							2		
<i>Leptosynapta</i> sp.									
<i>Leptopentacta elongata</i>				1					
<i>Amphipholis squamata</i>	7		11	1					
<i>Amphiura chiajei</i>									
<i>Amphiura</i> sp. (juvenile)				1					
<i>Amphiuridae</i> spp. (juvenile)	1				2				
<i>Ophiactis balli</i>								3	
<i>Ophiopholis aculeata</i>						8			16
<i>Ophiocarina nigra</i>		23		2	32	63	29	18	16
<i>Ophiothrix fragilis</i>	10					104	1	41	22
<i>Ophiothrix luetkeni</i>			13						
<i>Ophiothrix</i> sp. (juvenile)					1				
<i>Ophiura albida</i>				1	1				
<i>Ophiura</i> sp. (juvenile)	1								
<i>Ophiuroidea</i> spp. (juvenile)								6	
<i>Hiatella arctica</i>	2					35		4	2
<i>Ensis ensis</i>		2							10
<i>Phaxas pellucidus</i>				19			1		
<i>Laevicardium crassum</i>	1								
<i>Parvicardium scabrum</i>			4						
<i>Gari tellinella</i>							1		
<i>Abra alba</i>				4		3			
<i>Abra nitida</i>									
<i>Abra</i> spp.	1	1							
<i>Moerella donacina</i>	12	5	13	2	1		7		
<i>Astarte sulcata</i>				1	7				
<i>Limaria hians</i>						27		36	4
<i>Limatula</i> sp.									
<i>Thyasira flexuosa</i>	13	3	26	16			16		
<i>Corbula gibba</i>				1					
<i>Mya arenaria</i>									5
<i>Mya truncata</i>	1			19	1		2		
<i>Sphenia binghami</i>	2								
<i>Modiolus modiolus</i>		1				39		19	
<i>Mytilidae</i> spp. (juvenile)	3		3	1	2		1		
<i>Nuculana minuta</i>								1	
<i>Ennucula tenuis</i>			14		1	9		5	2
<i>Nucula hanleyi</i>									
<i>Nucula nitidosa</i>	20								
<i>Nucula nucleus</i>			9			5	2	10	
<i>Anomia ephippium</i>						2	1		
<i>Heteranomia squamula</i>							1		
<i>Pectinidae</i> sp. (juvenile)				1					
<i>Chamelea gallina</i>				1					
<i>Clausinella fasciata</i>				2					
<i>Dosinia exoleta</i>							4		
<i>Dosinia lupinus</i>	24	8	5	11			1		
<i>Dosinia</i> spp. (juvenile)					7				
<i>Gouldia minima</i>	45	4	28	3	20	5	18	2	
<i>Polititapes aureus</i>				1					
<i>Polititapes rhomboides</i>	2			1					
<i>Tapes</i> sp. (juvenile)									

Taxa	FG-03	FG-04	FG-05	FG-06	FG-09	FG-10	FG-23	FG-24	FG-25
<i>Timoclea ovata</i>	1	2				1	2		
<i>Venerupis corrugata</i>					1				
<i>Hemilepton nitidum</i>			4					2	
<i>Kurtiella bidentata</i>	16		2		2		5		
<i>Thracia villosiuscula</i>	15	2	5	6	8	2	10	4	2
<i>Thracia</i> sp.						1			
<i>Caudofoveata</i> spp.									
<i>Cylichna cylindracea</i>							1		
<i>Philine punctata</i>									1
<i>Hermania scabra</i>									
<i>Retusa truncatula</i>	2								
<i>Retusa</i> spp. (juvenile)				1					
<i>Vitreolina philippi</i>					1		1		
<i>Euspira nitida</i>		1		1	2				
<i>Alvania beanii</i>									4
<i>Alvania punctura</i>	2								3
<i>Onoba semicostata</i>	1					9		9	9
<i>Rissoa parva</i>	1								
<i>Buccinum undatum</i>					1	1			
<i>Nassarius reticulatus</i>									
<i>Raphitoma linearis</i>	1								
<i>Aeolidioidea</i> sp.	1								
<i>Aeolida</i> spp.			2						
<i>Calliostoma granulatum</i>									
<i>Emarginula fissura</i>		1							
<i>Tectura virginea</i>						1			
<i>Testudinalia testudinalis</i>	2		2				1		
<i>Brachystomia</i> spp.									2
<i>Gibbula cineraria</i>									
<i>Gibbula tumida</i>		1	1			1	1		
<i>Tonicella rubra</i>			2						
<i>Leptochiton asellus</i>	7	3	8	2	17	2	13	3	2
<i>Leptochiton cancellatus</i>	1		2				2		1
<i>Nematoda</i>	3				20	81		16	3
<i>Nemertea</i>	8		2	7	5	5	11	1	
<i>Phoronis</i> spp.	2	3		2	1		13		1
<i>Leucosolenia</i> sp.									
<i>Sycon ciliatum</i>							1		p
<i>Golfingia (Golfingia) elongata</i>							1		
<i>Golfingia (Golfingia) vulgaris vulgaris</i>						24	3		
<i>Golfingia</i> sp. (juvenile)	1								
<i>Nephasoma (Nephasoma) minutum</i>									
<i>Thysanocardia procera</i>									
<i>Phascolion (Phascolion) strombus strombus</i>		1							
<i>Maerl</i> spp.	p		p	p	p		p		
<i>Chlorophyta</i> spp.	p		p			p			
<i>Rhodophyta</i> spp.	p		p			p	p		

Taxa	FG-26	FG-27	FG-28	SG-02	SG-03	SG-05	SG-08	SG-09
Grania sp.		1						
Limnodriloides scandinavicus	1							
Protodorvillea kefersteini	1	1						
Lysidice unicornis		1						
Lumbrineris agg.	9	5	3					
Aphrodita aculeata								
Glycera alba				1				1
Glycera lapidum agg.	10	7	4					
Glycera unicornis								
Goniada maculata	1				1			
Gyptis propinqua		2						
Nereimyra punctata	1	85	78					
Oxydromus flexuosus							1	
Psamathe fusca		19						
Nephtys hombergii								
Nephtys incisa				1				
Nephtys kersivalensis	1							
Nereis zonata								
Nereididae sp. (juvenile)		1						
Pholoe baltica		26	3	2				
Pholoe inornata		71	44				1	
Eteone flava								
Eulalia bilineata								
Eulalia viridis			4					
Eumida bahusiensis								
Eumida sanguinea		10						
Nereiphylla rubiginosa								
Notophyllum foliosum								
Phyllodoce longipes cf.								
Phyllodoce sp.		1						
Pseudomystides limbata								
Ancistrosyllis groenlandica						1	2	
Pilargis verrucosa						1		
Acanthiolepis asperrima		1	3					
Subadyte pellucida		13						
Alentia gelatinosa		1	1					
Antinoella finmarchica		12						
Harmothoe spp.	1		4					
Lepidonotus squamatus		9	8					
Malmgrenia marphysae		2				1		
Malmgrenia mcintoshi								
Malmgrenia sp.		3						
Polynoiae (Neopolynoie paradoxa)								
Sphaerodorum gracilis	20	30	6				1	
Exogone verugera		7						
Pionosyllis sp.		2						
Sphaerosyllis taylori		2						
Sphaerosyllis spp.		1						
Syllis armillaris		16						
Syllis hyalina								
Syllis (Syllis fasciata)								
Owenia fusiformis	4		1					
Euchone rubrocincta								
Jasmineira caudata								
Jasmineira elegans								
Laonome kroyeri								
Parasabella torulis								
Sabellinae (Notaulax rectangulata)								
Sabellidae sp.		2						
Hydroides norvegica			1					
Hydroides sp.								
Serpula vermicularis			1					
Spirobranchus lamarcki		8						
Spirobranchus triqueter	13	33	37					
Spirobranchus spp.		5						
Aonides oxycephala		11	3					
Aonides paucibranchiata	5							
Dipolydora caulleryi								
Dipolydora coeca		4						
Malacoceros fuliginosus								
Prionospio cirrifera								
Prionospio multibranchiata cf.				5		2		
Pseudopolydora paucibranchiata cf.								
Pseudopolydora pulchra								
Spiophanes kroyeri				1	1		4	4
Macrochaeta			1					
Melinna elisabethae								
Melinna palmata							1	

Taxa	FG-26	FG-27	FG-28	SG-02	SG-03	SG-05	SG-08	SG-09
Sosane sulcata								
Ampharetidae sp. (juvenile)								
Aphelochaeta marioni				2				2
Chaetozone setosa				7			2	6
Chaetozone zetlandica	1	2	1					
Chaetozone sp. (juvenile)								
Cirratulus cirratus	3		5					
Cirratulus sp. (juvenile)								
Cirratulus (sp. A)			2					
Monticellina dorsobranchialis								
Tharyx killariensis							3	
Diplocirrus glaucus		15		6	2	33	17	1
Flabelligera affinis			1					
Pherusa flabellata		6	3					
Pherusa plumosa			1					
Amphictene auricoma	1						2	
Pectinaria (Pectinaria) belgica					1			
Amphitrite cirrata		6						
Eupolymnia nesidensis								
Pista cristata								
Pista mediterranea								
Polycirrus spp.	1	27	10			1	1	
Terebellides stroemii	2	2						
Trichobranchus roseus								
Terebellomorpha spp. (juvenile)		2						
Mediomastus fragilis	8	10	5					
Notomastus spp.		1				1		
Clymenura sp.		1						
Praxillella affinis				1				1
Praxillella gracilis						1		
Ophelina acuminata								
Scoloplos (Scoloplos) armiger						1		
Paradoneis lyra		12	7					
Paraonides spp.	4							
Paraonidae sp.								
Polyphysia crassa		7	1		1			
Scalibregma inflatum	1	6				1	1	1
Acidostoma obesum								
Ampelisca diadema		1						
Ampelisca spinipes	2							
Ampelisca tenuicornis								
Ampelisca typica								
Aora sp. (female)								
Atylus vedlomensis	4							
Apherusa bispinosa		1						
Phtisica marina								
Pseudoprotella phasma								
Cheirocratus sundevalli								
Cheirocratus sp.		1						
Corophium spp.								
Leptocheirus pectinatus								
Leptocheirus pilosus								
Dexamine spinosa								
Iphimedia minuta								
Lepidepcreum longicornis								
Lysianassa plumosa								
Animoceradocus semiserratus								
Monoculodes sp.								
Synchelidium haplocheles								
Gammaropsis maculata		5						
Gammaropsis spp.			6					
Photis longicaudata								
Harpinia crenulata								
Stenothoe marina		3						
Bodotria arenosa								
Vaunthompsonia cristata								
Diastylis laevis								
Eudorella emarginata					1			
Eudorella sp.								
Galathea intermedia								
Inachus dorsettensis								
Inachinae sp. (juvenile)								
Anapagurus hyndmanni		1						
Pandalina brevisrostris								
Pisidia longicornis								
Eurydice affinis								
Uromunna petiti			2					
Cymodoce truncata								

Taxa	FG-26	FG-27	FG-28	SG-02	SG-03	SG-05	SG-08	SG-09
Akanthophoreus gracilis								
Ostracoda spp.	1	15	5					
Balanus balanus	4	10	4					
Balanus crenatus								
Verruca stroemia		22						
Microporella spp.								
Disporella hispida								
Tubulipora spp.								
Myoxocephalus scorpius								
Polycarpa sp.								
Asciacea sp.								
Edwardsia claparedii								
Cereus pedunculatus								
Virgularia mirabilis						1		
Cerianthus lloydii			2					
Sertularella gaudichaudi		p						
Asterias rubens								
Henricia oculata								
Strongylocentrotus droebachiensis	1	1						
Strongylocentrotus (Strongylocentrotus pallidus)								
Echinocyamus pusillus	1	1						
Labidoplax media								
Leptosynapta bergensis								
Leptosynapta inhaerens		1						
Leptosynapta sp.								1
Leptopentacta elongata								
Amphipholis squamata		18						
Amphiura chiajei				30	16	5	17	11
Amphiura sp. (juvenile)								
Amphiuridae spp. (juvenile)								
Ophiactis balli								
Ophiopholis aculeata		5	14					
Ophiocarina nigra	17	28	1					
Ophiothrix fragilis		62	14					
Ophiothrix luetkeni		10						
Ophiothrix sp. (juvenile)								
Ophiura albida								
Ophiura sp. (juvenile)								
Ophiuroidea spp. (juvenile)		15	3					
Hiatella arctica		28	17					
Ensis ensis								
Phaxas pellucidus								
Laevicardium crassum								
Parvicardium scabrum		2						
Gari tellinella		1						
Abra alba			4					
Abra nitida					1			2
Abra spp.								
Moerella donacina								
Astarte sulcata		1	1					
Limaria hians		36	17					
Limatula sp.	1							
Thyasira flexuosa				5	4			
Corbula gibba								
Mya arenaria								
Mya truncata		7						
Sphenia binghami								
Modiolus modiolus	1	75	24					
Mytilidae spp. (juvenile)								
Nuculana minuta								
Ennucula tenuis	1		7		3		1	1
Nucula hanleyi							5	
Nucula nitidosa				1	1			
Nucula nucleus		28						
Anomia ephippium		2	1					
Heteranomia squamula		1						
Pectinidae sp. (juvenile)								
Chamelea gallina								
Clausinella fasciata								
Dosinia exoleta								
Dosinia lupinus	1							
Dosinia spp. (juvenile)		6						
Gouldia minima	5	16	4					
Polittapes aureus								
Polittapes rhomboides		2						
Tapes sp. (juvenile)		1						
Timoclea ovata		8	1					
Venerupis corrugata								

Taxa	FG-26	FG-27	FG-28	SG-02	SG-03	SG-05	SG-08	SG-09
Hemilepton nitidum		3	1					
Kurtiella bidentata		14						
Thracia villosiuscula		13	1					
Thracia sp.								
Caudofoveata spp.					1			1
Cylichna cylindracea				2	3	2		1
Philine punctata								
Hermania scabra		1						
Retusa truncatula		3						
Retusa spp. (juvenile)			1					
Vitreolina philippi								
Euspira nitida		1						
Alvania beanii								
Alvania punctura		26	4					
Onoba semicostata		188	18					
Rissoa parva								
Buccinum undatum								
Nassarius reticulatus		2						
Raphitoma linearis								
Aeolidioidea sp.								
Aeolidida spp.								
Calliostoma granulatum		2						
Emarginula fissura								
Tectura virginea		2						
Testudinalia testudinalis								
Brachystomia spp.		4						
Gibbula cineraria		1						
Gibbula tumida								
Tonicella rubra								
Leptochiton asellus	7	11	20					
Leptochiton cancellatus			1					
Nematoda	5	100	60					
Nemertea	7	5	1		1	3	1	
Phoronis spp.	1							
Leucosolenia sp.		p	p					
Sycon ciliatum		2	p					
Golfingia (Golfingia) elongata		4						
Golfingia (Golfingia) vulgaris vulgaris		28	25					
Golfingia sp. (juvenile)								
Nephasoma (Nephasoma) minutum		5						
Thysanocardia procera	1							
Phascolion (Phascolion) strombus strombus	1							
Maerl spp.		p						
Chlorophyta spp.		p						
Rhodophyta spp.		p	p					

ANNEX 6: CHARACTERISTIC TAXA & ENVIRONMENTAL DATA FROM SIMPROF GROUPS - ARRAN GRAB SAMPLES

Group A (Average similarity: 40.86%)						
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)	
T1G2	Slightly Gravelly Sandy Mud	0.32	20.96	78.73	90.6	
T1G3	Slightly Gravelly Sandy Mud	0.21	24.16	75.64	83.7	
T1G4	Slightly Gravelly Sandy Mud	0.02	16.18	83.80	91.9	
T1G5	Slightly Gravelly Sandy Mud	0.11	21.90	77.98	90.6	
	Dominant Taxa	Av. Abund	% of Sites	Contrib%	Cum.%	
	<i>Abra alba</i>	6.50	100	26.42	26.42	
	<i>Mediomastus fragilis</i>	3.25	100	16.47	42.88	
	<i>Spiophanes kroyeri</i>	1.50	100	14.6	57.48	
	<i>Chaetoderma nitidulum</i>	1.25	75	8.3	65.78	
	<i>Scoletoma fragilis</i>	0.75	75	7.68	73.46	
	<i>Glycera unicornis</i>	1.00	75	6.31	79.77	
	<i>Nucula nucleus</i>	4.00	50	4.03	83.79	
	<i>Nephtys incisa</i>	1.75	50	3.29	87.08	
	<i>Prionospio multibranchiata</i>	2.25	50	3.12	90.2	
	<i>Nucula hanleyi</i>	1.25	50	3.1	93.3	
	<i>Glycera alba</i>	0.50	50	2.32	95.62	
	<i>Nephtys kersivalensis</i>	1.25	50	2.19	97.81	
	<i>Chaetozone setosa</i>	0.75	50	2.19	100	

Group B (Average similarity: 37.37%)						
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)	
T1G1	Slightly Gravelly Sandy Mud	0.55	36.00	63.44	80.5	
T1G6	Gravelly Mud	8.38	38.51	53.11	63.1	
T1G7	Slightly Gravelly Sandy Mud	1.77	49.04	49.19	75.3	
T1G9	Gravelly Muddy Sand	22.51	40.88	36.61	80.9	
T1G10	Slightly Gravelly Sandy Mud	0.53	44.75	54.73	69.5	
	Dominant Taxa	Av. Abund	% of Sites	Contrib%	Cum.%	
	<i>Abra alba</i>	20.20	100	23.69	23.69	
	<i>Spiophanes kroyeri</i>	7.40	100	14.11	37.8	
	<i>Abra nitida</i>	8.60	80	11.2	49	
	<i>Ennucula tenuis</i>	19.20	80	10.96	59.96	
	<i>Dasybranchus</i> spp.	5.20	80	8.5	68.45	
	<i>Turritella communis</i>	6.00	60	6.37	74.82	
	<i>Nephtys incisa</i>	1.20	60	2.56	77.38	
	<i>Polycirrus</i> spp.	0.60	60	2.39	79.77	
	<i>Scalibregma inflatum</i>	1.00	60	2.2	81.98	
	<i>Scoletoma fragilis</i>	1.00	60	2.07	84.05	
	<i>Chaetozone setosa</i>	1.40	60	1.96	86.01	
	<i>Nucula nucleus</i>	2.60	40	1.65	87.66	
	<i>Abra</i> spp.	2.40	40	1.53	89.19	
	<i>Notomastus</i> spp.	1.6	40	1.19	90.38	

Group C (Average similarity: 47.41%)					
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)
D3G6	Muddy Sandy Gravel	57.25	28.61	14.14	4
D3G7	Muddy Sandy Gravel	55.48	34.49	10.03	8.5
D3G10	Gravelly Muddy Sand	25.25	50.73	24.02	10.4
Dominant Taxa					
	Av. Abund	% of Sites	Contrib%	Cum.%	
<i>Scalibregma inflatum</i>	20.33	100	7.08	7.08	
<i>Gouldia minima</i>	24.33	100	6.06	13.14	
<i>Lysianassa plumosa</i>	18.33	100	5.89	19.03	
<i>Vaunthompsonia cristata</i>	18.00	100	5.24	24.28	
<i>Leptochiton asellus</i>	10.67	100	4.55	28.83	
<i>Echinocyamus pusillus</i>	8.33	100	3.9	32.73	
<i>Tectura virginea</i>	7.33	100	3.49	36.22	
<i>Nereimyra punctata</i>	6.00	100	3.15	39.37	
<i>Spirobranchus triqueter</i>	5.00	100	3.02	42.39	
<i>Ostracoda</i> spp.	4.67	100	3.02	45.41	
<i>Thyasira flexuosa</i>	5.33	100	2.81	48.22	
<i>Mediomastus fragilis</i>	3.33	100	2.67	50.89	
<i>Hydroides norvegica</i>	4.67	100	2.34	53.23	
<i>Microdeutopus versiculatus</i>	3.00	100	2.34	55.57	
<i>Animoceradocus semiserratus</i>	2.00	100	2.34	57.91	
<i>Asciacea</i> spp.	6.33	100	2.34	60.25	
<i>Euspira nitida</i>	2.00	100	2.34	62.58	
<i>Glycera lapidum</i> agg.	3.00	100	1.89	64.48	
<i>Dosinia exoleta</i>	3.00	100	1.86	66.34	
<i>Goniada maculata</i>	1.33	100	1.65	67.99	
<i>Lepidepecreum longicornis</i>	2.00	100	1.65	69.65	
<i>Cerianthus lloydii</i>	1.67	100	1.65	71.3	

Station	Sediment Type	Group D			Depth (m CD)
		% Gravel	% Sand	% Mud	
D1G8	Muddy Sandy Gravel	30.18	55.37	14.46	10.4
	Taxa	Abundance	Cum. %		
	<i>Mediomastus fragilis</i>	19	11		
	<i>Leptochiton cancellatus</i>	18	21		
	<i>Lumbrineris</i> agg.	15	29		
	<i>Aonides paucibranchiata</i>	14	37		
	<i>Glycera lapidum</i> agg.	11	43		
	<i>Scalibregma inflatum</i>	11	49		
	<i>Echinocyamus pusillus</i>	7	53		
	<i>Nemertea</i> spp.	7	57		
	<i>Owenia fusiformis</i>	6	60		
	<i>Phoronis</i> spp.	5	63		
	<i>Lysianassa plumosa</i>	4	65		
	<i>Photis longicaudata</i>	4	67		
	<i>Protodorvillea kefersteini</i>	3	69		
	<i>Hydroides norvegica</i>	3	71		

Station	Sediment Type	Group E			Depth (m CD)
		% Gravel	% Sand	% Mud	
D5G3	Gravel	89.12	9.26	1.62	3.9
	Taxa	Abundance	Cum. %		
	<i>Nematoda</i> spp.	63	8		
	<i>Amphiuridae</i> spp. (juvenile)	51	15		
	<i>Gouldia minima</i>	43	21		
	<i>Malmgrenia mcintoshi</i>	38	26		
	<i>Leptochiton asellus</i>	38	31		
	<i>Leptochiton cancellatus</i>	30	35		
	<i>Ophiocomina nigra</i>	28	38		
	<i>Spirobranchus triqueter</i>	24	42		
	<i>Akera bullata</i>	24	45		
	<i>Nereiphylla rubiginosa</i>	23	48		
	<i>Malmgrenia marphysae</i>	21	51		
	<i>Testudinalia testudinalis</i>	21	53		
	<i>Mediomastus fragilis</i>	20	56		
	<i>Nemertea</i> spp.	20	59		
	<i>Gastropoda</i> spp.	19	61		
	<i>Animoceradocus semiserratus</i>	17	63		
	<i>Pholoe baltica</i>	14	65		
	<i>Pholoe inornata</i>	11	67		
	<i>Harmothoe impar</i>	11	68		

Group F (Average similarity: 57.49%)					
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)
D3G8	Gravelly Muddy Sand	19.21	67.97	12.82	5.3
D3G9	Muddy Sandy Gravel	31.11	61.80	7.09	6
Dominant Taxa		Av. Abund	% of Sites	Contrib%	Cum.%
<i>Nematoda</i> spp.		157.00	100	7.97	7.97
<i>Mediomastus fragilis</i>		37.00	100	6.24	14.21
<i>Aonides paucibranchiata</i>		41.00	100	4.83	19.04
<i>Grania</i> spp.		20.50	100	4.48	23.52
<i>Glycera lapidum</i> agg.		21.00	100	4.48	27.99
<i>Spirobranchus triqueter</i>		17.00	100	3.65	31.65
<i>Amphiuridae</i> spp. (juvenile)		21.00	100	3.5	35.15
<i>Scalibregma inflatum</i>		9.00	100	2.79	37.94
<i>Kurtiella bidentata</i>		8.00	100	2.79	40.73
<i>Polycirrus</i> spp.		6.50	100	2.58	43.31
<i>Thracia villosiuscula</i>		14.50	100	2.58	45.9
<i>Protodorvillea kefersteini</i>		12.00	100	2.36	48.26
<i>Pholoe baltica</i>		5.00	100	2.36	50.62
<i>Malmgrenia marphysae</i>		7.50	100	2.36	52.98
<i>Sphaerodorum gracilis</i>		5.50	100	2.36	55.34
<i>Nemertea</i> spp.		6.00	100	2.36	57.69
<i>Hydroides norvegica</i>		5.00	100	2.11	59.8
<i>Socarnes erythrophthalmus</i>		17.50	100	2.11	61.91
<i>Lumbrineris</i> agg.		3.50	100	1.83	63.74
<i>Aonides oxycephala</i>		6.50	100	1.83	65.57
<i>Conilera cylindracea</i>		3.50	100	1.83	67.4
<i>Asciidiidae</i> spp.		3.00	100	1.83	69.22
<i>Mya truncata</i>		3.50	100	1.83	71.05

Group G (Average similarity: 51.85%)					
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)
D1G7	Sandy Gravel	32.64	62.42	4.94	9.3
D3G4	Muddy Sandy Gravel	49.25	45.34	5.41	16
D5G4	Sandy Gravel	61.98	34.75	3.28	4.9
Dominant Taxa		Av. Abund	% of Sites	Contrib%	Cum.%
<i>Gouldia minima</i>		33.00	100	6.35	6.35
<i>Leptochiton asellus</i>		25.00	100	5.01	11.35
<i>Aonides paucibranchiata</i>		21.33	100	4.54	15.9
<i>Dosinia exoleta</i>		26.33	100	4.39	20.28
<i>Leptochiton cancellatus</i>		14.00	100	4.37	24.65
<i>Mediomastus fragilis</i>		14.67	100	4.16	28.81
<i>Echinocyamus pusillus</i>		20.33	100	4.16	32.97
<i>Thracia villosiuscula</i>		14.33	100	3.92	36.89
<i>Spirobranchus triqueter</i>		17.00	100	3.29	40.18
<i>Macrochaeta</i> spp.		9.67	100	3.26	43.44
<i>Clausinella fasciata</i>		8.00	100	3.1	46.54
<i>Cerianthus lloydii</i>		8.33	100	3.02	49.56
<i>Nematoda</i> spp.		36.67	100	2.83	52.39
<i>Glycera lapidum</i> agg.		7.33	100	2.76	55.14
<i>Polygordius</i> spp.		14.67	100	2.55	57.69
<i>Malmgrenia marphysae</i>		10.00	100	2.48	60.17
<i>Lumbrineris</i> agg.		6.00	100	2.19	62.37
<i>Harmothoe impar</i>		5.67	100	2.17	64.54
<i>Nemertea</i> spp.		5.33	100	2.06	66.6
<i>Pholoe baltica</i>		6.67	100	1.91	68.51
<i>Sphaerosyllis</i> spp.		4.00	100	1.91	70.42

Group H (Average similarity: 54.09%)					
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)
D1G9	Gravelly Muddy Sand	10.79	68.02	21.19	30.2
D1G10	Gravelly Muddy Sand	8.65	54.11	37.25	29.7
Dominant Taxa		Av. Abund	% of Sites	Contrib%	Cum.%
<i>Sosane sulcata</i>		28.50	100	10.26	10.26
<i>Owenia fusiformis</i>		25.00	100	9.86	20.13
<i>Lumbrineris</i> agg.		19.00	100	8.05	28.18
<i>Kurtiella bidentata</i>		7.00	100	5.33	33.5
<i>Polycirrus</i> spp.		6.00	100	4.5	38.01
<i>Balanus balanus</i>		18.00	100	4.5	42.51
<i>Goniada maculata</i>		5.50	100	4.03	46.53
<i>Ampelisca tenuicornis</i>		7.00	100	4.03	50.56
<i>Aonides oxycephala</i>		6.00	100	3.49	54.05
<i>Atylus vedlomensis</i>		4.50	100	3.49	57.53
<i>Verruca stroemia</i>		75.50	100	3.49	61.02
<i>Edwardsiidae</i> spp.		4.50	100	3.49	64.51
<i>Hiatella arctica</i>		3.00	100	3.49	67.99
<i>Spiophanes kroyeri</i>		3.50	100	2.85	70.84

Group I (Average similarity: 42.88%)					
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)
D1G4	Gravelly Muddy Sand	11.97	60.73	27.30	27.8
D1G5	Gravelly Muddy Sand	10.23	65.68	24.09	16.1
D3G2	Gravelly Muddy Sand	17.91	64.24	17.85	22.2
D5G2	Gravelly Muddy Sand	9.18	57.94	32.88	17.9
D5G5	Gravelly Muddy Sand	9.99	75.39	14.61	26.3
Dominant Taxa		Av. Abund	% of Sites	Contrib%	Cum.%
<i>Owenia fusiformis</i>		20.00	100	6.89	6.89
<i>Balanus crenatus</i>		25.80	100	6.73	13.62
<i>Lumbrineris</i> agg.		12.60	100	5.28	18.9
<i>Nemertea</i> spp.		3.40	100	3.21	22.11
<i>Galathowenia oculata</i>		7.60	100	3.19	25.3
<i>Amphictene auricoma</i>		4.20	100	3.03	28.33
<i>Terebellides stroemii</i>		4.60	100	2.9	31.23
<i>Phoronis</i> spp.		3.20	100	2.8	34.03
<i>Hydroides norvegica</i>		3.20	100	2.77	36.8
<i>Echinocyamus pusillus</i>		4.00	100	2.68	39.48
<i>Hiatella arctica</i>		2.60	100	2.58	42.06
<i>Glycera lapidum</i> agg.		2.60	100	2.47	44.53
<i>Edwardsia claparedii</i>		5.00	80	2.28	46.81
<i>Cerianthus lloydii</i>		2.40	100	2.23	49.04
<i>Aonides oxycephala</i>		2.20	100	2.12	51.15
<i>Scalibregma inflatum</i>		2.00	100	2.11	53.27
<i>Amphiuridae</i> spp. (juvenile)		4.40	80	2.07	55.33
<i>Euspira nitida</i>		1.80	100	2.06	57.39
<i>Ampelisca tenuicornis</i>		1.8	100	1.9	59.29
<i>Mediomastus fragilis</i>		2.6	80	1.76	61.05
<i>Polycirrus</i> spp.		2.4	80	1.75	62.8
<i>Dosinia exoleta</i>		5.4	80	1.69	64.5
<i>Amphiura filiformis</i>		3.6	80	1.62	66.12
<i>Pholoe inornata</i>		2.2	80	1.6	67.72
<i>Diplocirrus glaucus</i>		2	80	1.6	69.32
<i>Harmothoe impar</i>		1.8	80	1.54	70.85

Group J					
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)
D3G3	Slightly Gravelly Muddy Sand	1.32	61.91	36.77	43.1
Taxa		Abundance	Cum. %		
<i>Abra</i> spp.		20	19		
<i>Chaetozone setosa</i>		11	29		
<i>Abra alba</i>		6	35		
<i>Nucula hanleyi</i>		6	40		
<i>Spiophanes kroyeri</i>		5	45		
<i>Notomastus</i> spp.		5	50		
<i>Amphiura filiformis</i>		5	54		
<i>Mediomastus fragilis</i>		4	58		
<i>Edwardsiidae</i> spp.		4	62		
<i>Amphiura</i> spp.		4	65		
<i>Abra nitida</i>		4	69		
<i>Nuculana minuta</i>		3	72		

Station	Sediment Type	Group K			Depth (m CD)
		% Gravel	% Sand	% Mud	
D5G7	Slightly Gravelly Muddy Sand	3.37	59.06	37.57	51.3
Taxa		Abundance	Cum. %		
<i>Amphiuridae</i> spp. (juvenile)		20	10		
<i>Galathowenia oculata</i>		16	18		
<i>Owenia fusiformis</i>		15	26		
<i>Kurtiella bidentata</i>		8	30		
<i>Nemertea</i> spp.		8	34		
<i>Amphiura filiformis</i>		7	38		
<i>Spio</i> spp.		6	41		
<i>Spiophanes kroyeri</i>		6	44		
<i>Chaetozone christiei</i>		6	47		
<i>Polycarpa</i> spp.		6	50		
<i>Ennucula tenuis</i>		6	53		
<i>Sosane sulcata</i>		5	56		
<i>Lumbrineris</i> agg.		4	58		
<i>Ampharetidae</i> spp. (juvenile)		4	60		
<i>Amphictene auricoma</i>		4	62		
<i>Terebellides stroemii</i>		4	64		
<i>Pseudoprotella phasma</i>		4	66		
<i>Westwoodilla caecula</i>		4	68		
<i>Abra alba</i>		4	70		
<i>Arctica islandica</i> (juvenile)		4	72		

Station	Sediment Type	Group L			Depth (m CD)
		% Gravel	% Sand	% Mud	
D1G1	Slightly Gravelly Muddy Sand	0.35	72.21	27.44	48.7
Taxa		Abundance	Cum. %		
<i>Galathowenia oculata</i>		7	10		
<i>Abra alba</i>		6	19		
<i>Amphiura filiformis</i>		5	26		
<i>Polycarpa</i> spp.		4	31		
<i>Amphiuridae</i> spp. (juvenile)		4	37		
<i>Timoclea ovata</i>		3	41		
<i>Nephtys</i> spp. (juvenile)		2	44		
<i>Harmothoe impar</i>		2	47		
<i>Euclymene</i> spp.		2	50		
<i>Edwardsia claparedii</i>		2	53		
<i>Gari costulata</i>		2	56		
<i>Corbula gibba</i>		2	59		
<i>Nucula</i> spp.		2	61		
<i>Nemertea</i> spp.		2	64		
<i>Phoronis</i> spp.		2	67		

Group M (Average similarity: 47.61%)					
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)
D1G2	Slightly Gravelly Muddy Sand	0.22	63.39	36.39	43.2
D1G6	Gravelly Muddy Sand	6.24	65.20	28.56	35.2
D3G1	Slightly Gravelly Muddy Sand	0.53	60.91	38.56	42.3
D3G5	Slightly Gravelly Muddy Sand	0.36	65.28	34.36	40
D5G1	Slightly Gravelly Sand	3.35	90.43	6.22	20.9
Dominant Taxa		Av. Abund	% of Sites	Contrib%	Cum.%
<i>Galathowenia oculata</i>		28.80	100	9.62	9.62
<i>Amphiura filiformis</i>		17.00	100	8.95	18.57
<i>Owenia fusiformis</i>		20.60	100	7.32	25.89
<i>Amphiuridae</i> spp. (juvenile)		15.20	100	7.28	33.17
<i>Abra alba</i>		18.60	100	5.6	38.77
<i>Edwardsia claparedii</i>		9.20	100	4.31	43.08
<i>Diplocirrus glaucus</i>		4.80	100	4.12	47.2
<i>Nemertea</i> spp.		4.40	100	3.29	50.49
<i>Nucula hanleyi</i>		6.00	80	2.99	53.47
<i>Lumbrineris</i> agg.		3.00	100	2.91	56.39
<i>Phaxas pellucidus</i>		3.00	100	2.9	59.29
<i>Polycirrus</i> spp.		1.80	100	2.54	61.82
<i>Ampelisca tenuicornis</i>		1.80	100	2.53	64.35
<i>Phoronis</i> spp.		2.40	100	2.51	66.86
<i>Nephtys hombergii</i>		2.00	100	2.41	69.27
<i>Dosinia exoleta</i>		4.60	80	2.21	71.48

Group N (Average similarity: 34.16%)					
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)
D5G6	Slightly Gravelly Muddy Sand	0.53	61.61	37.85	48.2
T1G8	Slightly Gravelly Sandy Mud	0.44	42.50	57.06	80
Dominant Taxa		Av. Abund	% of Sites	Contrib%	Cum.%
<i>Abra alba</i>		68.00	100	31.86	31.86
<i>Amphictene auricoma</i>		5.50	100	8.03	39.89
<i>Abra nitida</i>		4.50	100	8.03	47.92
<i>Nucula nucleus</i>		30.00	100	8.03	55.95
<i>Nemertea</i> spp.		5.00	100	6.95	62.9
<i>Galathowenia oculata</i>		3.50	100	5.68	68.58
<i>Spiophanes kroyeri</i>		3.00	100	5.68	74.25
<i>Notomastus</i> spp.		2.50	100	5.68	79.93
<i>Nephtys hombergii</i>		3.00	100	4.01	83.94
<i>Owenia fusiformis</i>		1.00	100	4.01	87.96
<i>Dipolydora coeca</i>		1.00	100	4.01	91.97
<i>Chaetozone setosa</i>		2.50	100	4.01	95.99
<i>Turritella communis</i>		1.00	100	4.01	100

ANNEX 7: CHARACTERISTIC TAXA & ENVIRONMENTAL DATA FROM SIMPROF GROUPS - LOCH FYNE GRAB SAMPLES

Group A (Average similarity: 40.05%)					
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)
SG02	Slightly Gravelly Sandy Mud	0.24	31.62	68.14	46.9
SG03	Slightly Gravelly Sandy Mud	0.13	34.66	65.21	63
SG05	Slightly Gravelly Sandy Mud	0.37	40.48	59.14	37.2
SG08	Slightly Gravelly Sandy Mud	0.69	38.36	60.95	38.9
SG09	Slightly Gravelly Sandy Mud	0.03	33.44	66.53	79.8
Dominant Taxa		Av. Abund	% of Sites	Contrib%	Cum.%
<i>Amphiura chiajei</i>		15.8	100	34.97	34.97
<i>Diplocirrus glaucus</i>		11.8	100	19.01	53.98
<i>Cylichna cylindracea</i>		1.6	80	8.55	62.53
<i>Spiophanes kroyeri</i>		2	80	7.87	70.4
<i>Chaetozone setosa</i>		3	60	5.81	76.22
<i>Ennucula tenuis</i>		1	60	3.48	79.7
<i>Scalibregma inflatum</i>		0.6	60	3.39	83.09
<i>Nemertea</i>		1	60	3.32	86.42
<i>Thyasira flexuosa</i>		1.8	40	2.26	88.68
<i>Aphelochaeta marioni</i>		0.8	40	1.65	90.32
<i>Prionospio multibranchiata cf.</i>		1.4	40	1.54	91.86
<i>Abra nitida</i>		0.6	40	1.3	93.16
<i>Caudofoveata spp.</i>		0.40	40	1.3	94.46
<i>Glycera alba</i>		0.40	40	1.16	95.62
<i>Praxillella affinis</i>		0.40	40	1.16	96.79
<i>Nucula nitidosa</i>		0.40	40	1.13	97.92
<i>Ancistrosyllis groenlandica</i>		0.60	40	1.04	98.96
<i>Polycirrus spp.</i>		0.40	40	1.04	100

Group B					
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)
FG25	Gravelly Muddy Sand	6.54	82.17	11.29	10.8
Dominant Taxa		Abundance	Cum. %		
<i>Ophiothrix fragilis</i>		22	11		
<i>Nereimyra punctata</i>		20	22		
<i>Ophiopholis aculeata</i>		16	30		
<i>Ophiocomina nigra</i>		16	38		
<i>Harmothoe spp.</i>		11	44		
<i>Ensis ensis</i>		10	49		
<i>Onoba semicostata</i>		9	53		
<i>Lumbrineris agg.</i>		6	56		
<i>Mya arenaria</i>		5	59		
<i>Glycera lapidum agg.</i>		4	61		
<i>Pholoe baltica</i>		4	63		
<i>Chaetozone zetlandica</i>		4	65		
<i>Polycirrus spp.</i>		4	67		
<i>Paraonides spp.</i>		4	69		
<i>Limaria hians</i>		4	71		
<i>Alvania beanii</i>		4	73		

Group C					
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)
FG27	Gravelly Muddy Sand	13.31	69.16	17.54	10.8
Dominant Taxa		Abundance	Cum. %		
<i>Onoba semicostata</i>		188	14		
<i>Nematoda</i>		100	22		
<i>Nereimyra punctata</i>		85	28		
<i>Modiolus modiolus</i>		75	34		
<i>Pholoe inornata</i>		71	39		
<i>Ophiothrix fragilis</i>		62	44		
<i>Limaria hians</i>		36	47		
<i>Spirobranchus triqueter</i>		33	49		
<i>Sphaerodorum gracilis</i>		30	52		
<i>Ophiocomina nigra</i>		28	54		
<i>Hiatella arctica</i>		28	56		
<i>Nucula nucleus</i>		28	58		
<i>Golfingia (Golfingia) vulgaris vulgaris</i>		28	60		
<i>Polycirrus</i> spp.		27	62		
<i>Pholoe baltica</i>		26	64		
<i>Alvania punctura</i>		26	66		
<i>Verruca stroemia</i>		22	68		
<i>Psamathe fusca</i>		19	69		
<i>Amphipholis squamata</i>		18	71		

Group D (Average similarity: 62.08%)					
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)
FG10	-	-	-	-	7.5
FG24	-	-	-	-	9.7
FG28	-	-	-	-	10.8
Dominant Taxa		Av. Abund	% of Sites	Contrib%	Cum.%
<i>Nereimyra punctata</i>		95.00	100	12.41	12.41
<i>Nematoda</i>		52.33	100	6.94	19.35
<i>Pholoe inornata</i>		43.67	100	6.93	26.28
<i>Ophiothrix fragilis</i>		53.00	100	6.33	32.61
<i>Modiolus modiolus</i>		27.33	100	6.12	38.73
<i>Limaria hians</i>		26.67	100	6.09	44.82
<i>Polycirrus</i> spp.		9.67	100	4.14	48.96
<i>Onoba semicostata</i>		12.00	100	4.06	53.02
<i>Sphaerodorum gracilis</i>		13.00	100	3.99	57.01
<i>Hiatella arctica</i>		18.67	100	3.57	60.58
<i>Spirobranchus triqueter</i>		17.67	100	3.47	64.05
<i>Ennucula tenuis</i>		7.00	100	3.19	67.24
<i>Ophiocomina nigra</i>		27.33	100	2.9	70.14

Station	Sediment Type	Group E			Depth (m CD)
		% Gravel	% Sand	% Mud	
FG06	Gravelly Muddy Sand	7.43	65.59	26.98	12.9
	Dominant Taxa	Abundance	Cum. %		
	<i>Pseudopolydora pulchra</i>	58	24		
	<i>Phaxas pellucidus</i>	19	32		
	<i>Mya truncata</i>	19	40		
	<i>Thyasira flexuosa</i>	16	47		
	<i>Dosinia lupinus</i>	11	52		
	<i>Nemertea</i>	7	55		
	<i>Ampelisca tenuicornis</i>	6	57		
	<i>Thracia villosiuscula</i>	6	60		
	<i>Pholoe inornata</i>	5	62		
	<i>Jasmineira elegans</i>	4	63		
	<i>Mediomastus fragilis</i>	4	65		
	<i>Abra alba</i>	4	67		
	<i>Goniada maculata</i>	3	68		
	<i>Owenia fusiformis</i>	3	69		
	<i>Dexamine spinosa</i>	3	71		
	<i>Gammaropsis</i> spp.	3	72		
	<i>Labidoplax media</i>	3	73		
	<i>Gouldia minima</i>	3	74		

Station	Sediment Type	Group F			Depth (m CD)
		% Gravel	% Sand	% Mud	
FG04	Gravelly Muddy Sand	15.23	65.46	19.31	10.5
	Dominant Taxa	Abundance	Cum. %		
	<i>Ophiocomina nigra</i>	23	18		
	<i>Spirobranchus triqueter</i>	19	33		
	<i>Lysianassa plumosa</i>	8	39		
	<i>Dosinia lupinus</i>	8	45		
	<i>Glycera lapidum</i> agg.	5	49		
	<i>Balanus balanus</i>	5	53		
	<i>Moerella donacina</i>	5	57		
	<i>Lumbrineris</i> agg.	4	60		
	<i>Sphaerodorum gracilis</i>	4	63		
	<i>Terebellides stroemii</i>	4	66		
	<i>Gouldia minima</i>	4	70		
	<i>Thyasira flexuosa</i>	3	72		
	<i>Leptochiton asellus</i>	3	74		
	<i>Phoronis</i> spp.	3	77		

Group H (Average similarity: 39.21%)					
Station	Sediment Type	% Gravel	% Sand	% Mud	Depth (m CD)
FG03	Gravelly Muddy Sand	13.70	56.01	30.29	9.4
FG05	Gravelly Muddy Sand	13.44	56.40	30.16	9
FG23	Slightly Gravelly Muddy Sand	3.76	53.55	42.69	10.3
Dominant Taxa		Av. Abund	% of Sites	Contrib%	Cum.%
<i>Gouldia minima</i>		30.33	100	9.13	9.13
<i>Spirobranchus triqueter</i>		47.67	100	8.26	17.4
<i>Thyasira flexuosa</i>		18.33	100	7.39	24.78
<i>Moerella donacina</i>		10.67	100	5.81	30.59
<i>Leptochiton asellus</i>		9.33	100	5.35	35.95
<i>Thracia villosiuscula</i>		10.00	100	5.02	40.96
<i>Lysianassa plumosa</i>		8.00	100	4.41	45.38
<i>Photis longicaudata</i>		12.33	100	4.07	49.45
<i>Nemertea</i>		7.00	100	3.7	53.15
<i>Kurtiella bidentata</i>		7.67	100	3.32	56.47
<i>Vaunthompsonia cristata</i>		10.33	100	3	59.47
<i>Dosinia lupinus</i>		10.00	100	2.85	62.32
<i>Polycirrus</i> spp.		5.33	100	2.77	65.09
<i>Cymodoce truncata</i>		3.00	100	2.68	67.77
<i>Mytilidae</i> spp. (juvenile)		2.33	100	2.49	70.26
<i>Testudinalia testudinalis</i>		1.67	100	2.27	72.53
<i>Leptochiton cancellatus</i>		1.67	100	2.24	74.78
<i>Lumbrineris</i> agg.		2.00	100	1.98	76.75
<i>Galathea intermedia</i>		1.33	100	1.98	78.73

ANNEX 8: SPECIES DATA - LIMARIA DIVER CORES LOCH FYNE

Taxa	FS1.1	FS1.2	FS1.3	FS1.4	FS1.5	FS3.1	FS3.2	FS3.3	FS3.4	FS3.5	FS4.1	FS4.2	FS4.3	FS4.4
<i>Grania</i> sp.			1		2									
<i>Tubificoides amplivasatus</i>														
<i>Protodorvillea kefersteini</i>		1							1					
<i>Leodice harassii</i>			1											
<i>Lysidice unicornis</i>														
<i>Lumbrineris</i> agg.			2			1				1				1
<i>Glycera lapidum</i> agg.	1		1	1	4	1		1	3					
<i>Goniada maculata</i>														
<i>Nereimyra punctata</i>	14		11		3			3	3		1			
<i>Psamathe fusca</i>	5		9		6			2	6					
<i>Eunereis longissima</i>	1		1											
<i>Nereis pelagica</i>														
<i>Pholoe baltica</i>	2		3		14				2		1			
<i>Pholoe inornata</i>	17		44		32			8	3					
<i>Eteone (longa/flava</i> agg.)	1													
<i>Eulalia bilineata</i>														
<i>Eulalia viridis</i>														
<i>Eumida sanguinea</i>	1		1		2			1						
<i>Nereiphylla rubiginosa</i>	1		1					1						
<i>Notophyllum foliosum</i>														
<i>Acanthiclepis asperrima</i>						1								
<i>Harmothoe</i> spp.	2		1								1			
<i>Lepidonotus squamatus</i>	3		1		3				2					
<i>Lepidonotus</i> sp.														
<i>Malmgrenia marphysae</i>														
<i>Malmgrenia</i> sp.														
<i>Polynoinae</i> sp.														
<i>Sphaerodorum gracilis</i>	6	1	4		5	2		1	8					
<i>Exogone verugera</i>			1					1						
<i>Myrianida</i> sp.														
<i>Sphaerosyllis taylori</i>														
<i>Sphaerosyllis</i> spp.			1						1					
<i>Syllis armillaris</i>	2					1								
<i>Galathowenia oculata</i>														
<i>Owenia fusiformis</i>				2	1				1	2				
<i>Bispira (Bispira viola)</i>														
<i>Euchone rosea</i>							1							
<i>Sabellinae (Dialychone</i> sp.)				3										
<i>Sabellidae</i> spp.					1					1			1	
<i>Hydroides norvegica</i>			1											
<i>Spirobranchus lamarcki</i>					1									
<i>Spirobranchus triqueter</i>	4		1			2		4	2		5			
<i>Spirobranchus</i> spp.			2											
<i>Aonides oxycephala</i>	4	1	4		1			4	1					5
<i>Aonides paucibranchiata</i>	1					1	1						1	
<i>Dipolydora caulleryi</i>														
<i>Dipolydora coeca</i> agg.			2											
<i>Polydora</i> sp. (juvenile)														
<i>Pseudopolydora paucibranchiata</i> cf.				1										
<i>Pseudopolydora</i> sp.														
<i>Macrochaeta</i> spp.														
<i>Sosane sulcata</i>							1	1						
<i>Ampharetidae</i> sp. (juvenile)													1	
<i>Chaetozone setosa</i>						1								
<i>Chaetozone zetlandica</i>							1							
<i>Chaetozone</i> sp.														
<i>Cirratulus cirratus</i>			3											
<i>Flabelligera affinis</i>	6		11		8			1	9					
<i>Pherusa flabellata</i>			11						2					
<i>Pherusa plumosa</i>	5				10									
<i>Amphictene auricoma</i>						1			1					
<i>Pista cristata</i>						1								
<i>Pista mediterranea</i>					2			2	1				1	1
<i>Pista (Pista mirabilis)</i>								1						
<i>Polycirrus</i> spp.	10				7			6						1
<i>Terebellidae</i> spp.					1									
<i>Terebellides stroemii</i>					1									
<i>Trichobranchnus glacialis</i>									3					
<i>Trichobranchnus roseus</i>					2									
<i>Mediomastus fragilis</i>	4	3	6						1					
<i>Euclymene</i> sp.			1											
<i>Maldanidae</i> sp.							1							
<i>Opheliidae</i> sp.														
<i>Paradoneis lyra</i>	2			1	3									
<i>Polygordius</i> sp.														
<i>Polyphysia crassa</i>					2									

Taxa	FS1.1	FS1.2	FS1.3	FS1.4	FS1.5	FS3.1	FS3.2	FS3.3	FS3.4	FS3.5	FS4.1	FS4.2	FS4.3	FS4.4
<i>Scalibregma inflatum</i>	1		1	1										1
<i>Ampelisca typica</i>														
<i>Microdeutopus</i> sp. (female)														
<i>Atylus vedlomensis</i>														
<i>Corophium</i> sp.														
<i>Dexamine spinosa</i>									1					
<i>Eusirus longipes</i>														
<i>Lysianassa plumosa</i>														
<i>Lysianassidae</i> sp.														
<i>Monoculodes</i> sp.							2							
<i>Westwoodilla caecula</i>		2				1								
<i>Gammaropsis maculata</i>														
<i>Megamphopus cornutus</i>														
<i>Photis longicaudata</i>														
<i>Parametaphoxus fultoni</i>	1		1		1									
<i>Urothoe elegans</i>														
<i>Vaunthompsonia cristata</i>			1											
<i>Cumella (Cumella) pygmaea</i>			1											
<i>Nannastacus unguiculatus</i>			2											
<i>Galathea intermedia</i>														
<i>Eurynome aspera</i>														
<i>Cirolana cranchi</i>														
<i>Idotea granulosa</i>														
<i>Mysida</i> sp. (juvenile)														
Ostracoda spp.	1							1	1					
<i>Callipallene brevirostris</i>	1													
<i>Cyclopoida</i> sp.														
<i>Balanus balanus</i>	1				1			6	2					
<i>Balanus</i> sp.			1											
<i>Verruca stroemia</i>	3				1			2						
<i>Copepoda</i> sp.								1						
<i>Scrupocellaria scruposa</i>														
<i>Electra pilosa</i>			P											
<i>Fenestulina malusii</i>														
<i>Microporella ciliata</i>														
<i>Celleporoidea</i> sp.														
Bryozoa spp.														
<i>Asciidiella scabra</i>														
Asciidiidae spp.														
<i>Corella parallelogramma</i>										1				
<i>Polycarpa</i> sp.			1		2									
<i>Styela coriacea</i>								1	9					
Asciadiaea			2											
Actiniaria spp.														
<i>Alcyonium</i> sp.														
<i>Cerianthus lloydii</i>		1		2							2	2		
Anthozoa sp.														
<i>Octocorallia</i> sp.														
<i>Sertularella gaudichaudi</i>														
<i>Psammechinus miliaris</i>						2								
<i>Strongylocentrotus droebachiensis</i>														1
<i>Echinocyamus pusillus</i>			1					1	2					
<i>Echinoidea</i> sp. (juvenile)														
<i>Labidoplax media</i>														
<i>Leptosynapta inhaerens</i>														
<i>Leptosynapta</i> sp.														
<i>Thyone fusus</i>					1									
<i>Thyone</i> sp.	1													
<i>Amphipholis squamata</i>	5		7		6									
<i>Ophiopholis aculeata</i>								1					5	
<i>Ophiocomina nigra</i>	6	2	5	1	12	13	14	4	5	15	8	1	2	6
<i>Ophiothrix fragilis</i>	1		3											4
<i>Ophiothrix luetkeni</i>	3		3											
<i>Ophiothrix</i> sp. (juvenile)														
<i>Ophiura albida</i>				1										
<i>Ophiuroidea</i> spp. (juvenile)			3										1	
<i>Pedicellina</i> sp.														
<i>Hiatella arctica</i>	16				14	1								
<i>Phaxas pellucidus</i>				1		1								
<i>Parvicardium scabrum</i>					1									
<i>Abra alba</i>								1						
<i>Moerella donacina</i>				5					1	3		2	1	
<i>Astarte sulcata</i>					1									
<i>Limaria hians</i>	8		6		7			2	5					
<i>Lucinoma borealis</i>			1											
<i>Thyasira flexuosa</i>														
<i>Mya truncata</i>					1									
<i>Sphenia binghami</i>								1						

Taxa	FS1.1	FS1.2	FS1.3	FS1.4	FS1.5	FS3.1	FS3.2	FS3.3	FS3.4	FS3.5	FS4.1	FS4.2	FS4.3	FS4.4
<i>Modiolus modiolus</i>	13		10		13			11	6					
<i>Musculus</i> sp.					1									
<i>Ennucula tenuis</i>			3											
<i>Nucula nitidosa</i>	3													
<i>Nucula nucleus</i>					2			8						1
<i>Anomia ephippium</i>	1		1					1						
<i>Aequipecten opercularis</i>			3											
<i>Chamelea striatula</i>														
<i>Dosinia exoleta</i>		4												
<i>Dosinia lupinus</i>		1	1	2				2		1				
<i>Dosinia</i> spp. (juvenile)	2		1			1				2				
<i>Gouldia minima</i>	1	1	3	1	1	1	1	4						
<i>Tapes</i> sp. (juvenile)														
<i>Timoclea ovata</i>		1				1								
<i>Kellia suborbicularis</i>														
<i>Hemilepton nitidum</i>			1											
<i>Spisula elliptica</i>														
<i>Kurtiella bidentata</i>	1				1							2		
<i>Thracia villosiuscula</i>	2	2	11	2	8	4	2	3				1	1	1
<i>Thracia</i> sp.	1				1	1				1				
<i>Philine</i> sp.					1									
<i>Retusa truncatula</i>			3											
<i>Euspira nitida</i>														
<i>Alvania punctura</i>	4		52		1			1						
<i>Onoba semicostata</i>	13		46		14			3	4					
<i>Nassarius reticulatus</i>														
<i>Tectura virginea</i>			1											
<i>Brachystomia</i> spp.			4		1									
<i>Gibbula cineraria</i>	1													
<i>Leptochiton asellus</i>											3			
<i>Leptochiton cancellatus</i>								1						
<i>Nematoda</i> spp.	28		59		68		1	55	11					
<i>Nemertea</i> spp.	1		1		2			1						
<i>Platyhelminthes</i>														
<i>Leucosolenia botryoides</i>			P											
<i>Leucosolenia</i> sp.	P							P	P					
<i>Sycon ciliatum</i>	1		1		1									
<i>Cliona celata</i>									P					
<i>Golfingia (Golfingia) elongata</i>								2						
<i>Golfingia (Golfingia) vulgaris vulgaris</i>														
<i>Golfingia</i> spp.					15			4						
<i>Nephasoma (Nephasoma) minutum</i>	5		5											
<i>Maerl</i> spp.	P													
<i>Phoronis</i> spp.												1		
<i>Ochrophyta</i> spp.			p											
<i>Rhodophyta</i> spp.	p		p					p						

Taxa	FS4.5	FS4.6	FS5.1	FS5.2	FS5.3	FS5.4	FS5.5	FS5.6	FS6.1	FS6.2	FS6.3	FS6.4	FS6.5	FS6.6
<i>Grania</i> sp.													1	
<i>Tubificoides amplivasatus</i>								1						
<i>Protodorvillea kefersteini</i>														
<i>Leodice harassii</i>														
<i>Lysidice unicornis</i>				1										
<i>Lumbrineris</i> agg.				2							2			2
<i>Glycera lapidum</i> agg.		1					1	3		1				
<i>Goniada maculata</i>				1										
<i>Nereimyra punctata</i>						9	5	9			2			2
<i>Psamathe fusca</i>						6	4	6						2
<i>Eunereis longissima</i>					1									
<i>Nereis pelagica</i>					1		1							
<i>Pholoe baltica</i>						8		3						
<i>Pholoe inornata</i>					10	1	7	18			4	1		3
<i>Eteone (longa/flava</i> agg.)								1						
<i>Eulalia bilineata</i>											1			
<i>Eulalia viridis</i>								1			1			
<i>Eumida sanguinea</i>								1			2			
<i>Nereiphylla rubiginosa</i>								1		1	5	1		
<i>Notophyllum foliosum</i>											1			
<i>Acanthiolepis asperrima</i>														
<i>Harmothoe</i> spp.						2	3	2						
<i>Lepidonotus squamatus</i>						2	1	5			1			
<i>Lepidonotus</i> sp.				2										
<i>Malmgrenia marphysae</i>											1			
<i>Malmgrenia</i> sp.								1						
<i>Polynoinae</i> sp.				1										
<i>Sphaerodorum gracilis</i>				6	3	4	3							1
<i>Exogone verugera</i>														
<i>Myrianida</i> sp.										1				
<i>Sphaerosyllis taylori</i>						1								
<i>Sphaerosyllis</i> spp.														
<i>Syllis armillaris</i>								1						
<i>Galathowenia oculata</i>												1		
<i>Owenia fusiformis</i>											2	P		
<i>Bispira (Bispira viola)</i>											1			
<i>Euchone rosea</i>														
<i>Sabellinae (Dialychone</i> sp.)		1											1	
<i>Sabellidae</i> spp.														
<i>Hydroides norvegica</i>						1					1	1		
<i>Spirobranchus lamarcki</i>						1		1				3		
<i>Spirobranchus triqueter</i>			3		8	2	1			13	17	7	1	
<i>Spirobranchus</i> spp.												2		
<i>Aonides oxycephala</i>					3	2		3						
<i>Aonides paucibranchiata</i>							1				1		1	
<i>Dipolydora caulleryi</i>						2		3						
<i>Dipolydora coeca</i> agg.											3			
<i>Polydora</i> sp. (juvenile)									1					
<i>Pseudopolydora paucibranchiata</i> cf.												2		
<i>Pseudopolydora</i> sp.		4												
<i>Macrochaeta</i> spp.								1	1					
<i>Sosane sulcata</i>														
<i>Ampharetidae</i> sp. (juvenile)														
<i>Chaetozone setosa</i>														
<i>Chaetozone zetlandica</i>				1										
<i>Chaetozone</i> sp.										1				
<i>Cirratulus cirratus</i>							1	3			4			
<i>Flabelligera affinis</i>					6	6	9	8						2
<i>Pherusa flabellata</i>					3									
<i>Pherusa plumosa</i>					1	10		11						
<i>Amphictene auricoma</i>														
<i>Pista cristata</i>														
<i>Pista mediterranea</i>											1			
<i>Pista (Pista mirabilis)</i>														
<i>Polycirrus</i> spp.		1			6	9	2	5						3
<i>Terebellidae</i> spp.								1					1	
<i>Terebellides stroemii</i>		1	1			1	1	3		1	1	1		
<i>Trichobranthus glacialis</i>					1									
<i>Trichobranthus roseus</i>								2						1
<i>Mediomastus fragilis</i>		1				2	1					1		
<i>Euclymene</i> sp.														
<i>Maldanidae</i> sp.														
<i>Opheliidae</i> sp.			1											
<i>Paradoneis lyra</i>		1			2	4		1		1				
<i>Polygordius</i> sp.								P						
<i>Polyphysia crassa</i>								2						
<i>Scalibregma inflatum</i>														1
<i>Ampelisca typica</i>													1	

<i>Nucula nitidosa</i>								2					1	2
<i>Nucula nucleus</i>					11			11		1				1
<i>Anomia ephippium</i>					1	5	1							
<i>Aequipecten opercularis</i>		2			2		1							
<i>Chamelea striatula</i>											1			
<i>Dosinia exoleta</i>			2								2	1		
<i>Dosinia lupinus</i>											1			
<i>Dosinia</i> spp. (juvenile)		3		3				1	1	6	2	2		
<i>Gouldia minima</i>		3			2		1		1	14	8	3	12	1
<i>Tapes</i> sp. (juvenile)		1												
<i>Timoclea ovata</i>	1											1	1	1
<i>Kellia suborbicularis</i>														1
<i>Hemilepton nitidum</i>					2	1		1						
<i>Spisula elliptica</i>					1									
<i>Kurtiella bidentata</i>					2									
<i>Thracia villosiuscula</i>		5	2	3	6	7	1	2	1	2	3	3	5	1
<i>Thracia</i> sp.														
<i>Philina</i> sp.							1							
<i>Retusa truncatula</i>														
<i>Euspira nitida</i>			1							1				
<i>Alvania punctura</i>					3	5	5	8						
<i>Onoba semicostata</i>					6	17	10	36						
<i>Nassarius reticulatus</i>					3									
<i>Tectura virginea</i>														
<i>Brachystomia</i> spp.														
<i>Gibbula cineraria</i>														
<i>Leptochiton asellus</i>						2					3		1	
<i>Leptochiton cancellatus</i>														
<i>Nematoda</i> spp.			1		94	58	15	60						2
<i>Nemertea</i> spp.		1			5	1		4			3		1	
<i>Platyhelminthes</i>					1									
<i>Leucosolenia botryoides</i>														P
<i>Leucosolenia</i> sp.				P										
<i>Sycon ciliatum</i>		1					P	2			1			
<i>Ciona celata</i>			P											
<i>Golfingia (Golfingia) elongata</i>						1								1
<i>Golfingia (Golfingia) vulgaris vulgaris</i>					12	9	8	2						
<i>Golfingia</i> spp.														
<i>Nephasoma (Nephasoma) minutum</i>								11						
<i>Maerl</i> spp.		P				P					P		P	
<i>Phoronis</i> spp.												3	1	
<i>Ochrophyta</i> spp.														
<i>Rhodophyta</i> spp.														

ANNEX 9: CHARACTERISTIC TAXA FROM SIMPROF GROUPS - LIMARIA DIVER CORES LOCH FYNE

Group A (Sample 6.1)		
Taxa	Abundance	Cum. %
Polydora sp. (juvenile)	1	20
Macrochaeta spp.	1	40
Dosinia spp. (juvenile)	1	60
Gouldia minima	1	80
Thracia villosiuscula	1	100

Group B (Average similarity: 23.52%)				
(samples 1.2, 1.4, 3.1, 3.2, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 5.1, 5.2, 6.6)				
Dominant Taxa	Av. Abund	% of Sites	Contrib%	Cum.%
<i>Ophiocomina nigra</i>	8.15	100.00	53.18	53.18
<i>Thracia villosiuscula</i>	1.46	76.92	17.73	70.9
<i>Moerella donacina</i>	0.92	38.46	5.33	76.24
<i>Cerianthus lloydii</i>	0.54	30.77	3.23	79.47
<i>Gouldia minima</i>	0.38	38.46	2.68	82.14
<i>Ophiothrix fragilis</i>	1.08	23.08	1.94	84.08
<i>Timoclea ovata</i>	0.31	30.77	1.68	85.76
<i>Lumbrineris</i> agg.	0.38	30.77	1.6	87.36
<i>Spirobranchus triqueter</i>	0.77	23.08	1.33	88.7
<i>Dosinia</i> spp. (juvenile)	0.46	23.08	1.21	89.91
<i>Strongylocentrotus droebachiensis</i>	0.23	23.08	1.08	90.99

Group C (Sample 3.4)		
Dominant Taxa	Abundance	Cum. %
<i>Nematoda</i> spp.	11	11.34
<i>Flabelligera affinis</i>	9	20.62
<i>Asciacea</i>	9	29.90
<i>Sphaerodorum gracilis</i>	8	38.14
<i>Psamathe fusca</i>	6	44.33
<i>Modiolus modiolus</i>	6	50.52
<i>Ophiocomina nigra</i>	5	55.67
<i>Limaria hians</i>	5	60.82
<i>Onoba semicostata</i>	4	64.95
<i>Glycera lapidum</i> agg.	3	68.04
<i>Nereimyra punctata</i>	3	71.13
<i>Pholoe inornata</i>	3	74.23
<i>Trichobranchnus glacialis</i>	3	77.32

Group D (Sample 1.3)		
Dominant Taxa	Abundance	Cum. %
<i>Nematoda</i> spp.	59	15.95
<i>Alvania punctura</i>	52	30.00
<i>Onoba semicostata</i>	46	42.43
<i>Pholoe inornata</i>	44	54.32
<i>Nereimyra punctata</i>	11	57.30
<i>Flabelligera affinis</i>	11	60.27
<i>Pherusa flabellata</i>	11	63.24
<i>Thracia villosiuscula</i>	11	66.22
<i>Modiolus modiolus</i>	10	68.92
<i>Psamathe fusca</i>	9	71.35
<i>Amphipholis squamata</i>	7	73.24
<i>Mediomastus fragilis</i>	6	74.86
<i>Limaria hians</i>	6	76.49
<i>Ophiocomina nigra</i>	5	77.84
<i>Nephasoma (Nephasoma) minutum</i>	5	79.19

Group E (Average similarity: 23.52%)				
(samples 1.1, 1.5, 3.3, 5.3, 5.4, 5.5, 5.6)				
Dominant Taxa	Av. Abund	% of Sites	Contrib%	Cum.%
<i>Nematoda</i> spp.	54.00	100	12.03	12.03
<i>Modiolus modiolus</i>	10.86	100	6.19	18.22
<i>Onoba semicostata</i>	14.14	100	5.49	23.7
<i>Balanus balanus</i>	28.57	100	5.37	29.08
<i>Pholoe inornata</i>	13.29	100	5.06	34.14
<i>Ophiocomina nigra</i>	10.29	100	4.95	39.08
<i>Polycirrus</i> spp.	6.43	100	4.33	43.42
<i>Flabelligera affinis</i>	6.29	100	4.15	47.57
<i>Verruca stroemia</i>	14.43	100	3.92	51.49
<i>Limaria hians</i>	5.14	100	3.84	55.32
<i>Sphaerodorum gracilis</i>	4.00	100	3.3	58.62
<i>Hiatella arctica</i>	10.00	71	3.24	61.86
<i>Nereimyra punctata</i>	6.14	86	3.05	64.91
<i>Thracia villosiuscula</i>	4.14	100	3.02	67.93
<i>Alvania punctura</i>	3.86	100	2.94	70.87

Group F (Average similarity: 23.52%)				
(samples 4.6, 6.2, 6.3, 6.4, 6.5)				
Dominant Taxa	Av. Abund	% of Sites	Contrib%	Cum.%
<i>Gouldia minima</i>	8	100	21.43	21.43
<i>Thracia villosiuscula</i>	3.6	100	16.88	38.31
<i>Spirobranchus triqueter</i>	7.6	80	11.19	49.5
<i>Dosinia</i> spp. (juvenile)	2.6	80	8.52	58.02
<i>Photis longicaudata</i>	3.4	60	6.63	64.65
<i>Terebellides stroemii</i>	0.8	80	5.77	70.42
<i>Lysianassa plumosa</i>	1	60	2.83	73.26
<i>Nemertea</i> spp.	1	60	2.79	76.05
<i>Modiolus modiolus</i>	0.6	60	2.79	78.84
<i>Nereiphylla rubiginosa</i>	1.4	60	2.73	81.57
<i>Moerella donacina</i>	1.4	40	1.93	83.5
<i>Timoclea ovata</i>	0.4	40	1.21	84.71
<i>Phoronis</i> spp.	0.8	40	1.21	85.93

ANNEX 10: CELL FREQUENCY COUNTS OF *LIMARIA HIAN*S NEST MATERIAL AT 1 M INTERVALS ALONG FIVE PERMANENT TRANSECTS

Distance (m)	FS1	FS3	FS4	FS5	FS6
0	17	7	15	12	0
1	25	12	13	6	0
2	24	7	13	20	0
3	13	12	18	9	0
4	13	10	9	8	0
5	9	7	13	16	0
6	13	10	9	15	0
7	10	9	17	14	0
8	16	17	18	9	0
9	17	16	20	16	0
10	18	9	12	20	0
11	11	16	12	8	0
12	16	15	15	10	0
13	12	15	13	21	0
14	12	20	11	6	0
15	10	13	16	6	0
16	11	10	11	15	0
17	15	14	9	13	0
18	17	12	13	10	0
19	10	14	12	15	0
20	18	15	17	20	0
21	20	10	16	17	0
22	12	11	11	13	0
23	14	6	9	18	0
24	17	8	11	11	0
25	8	6	2	15	0

ANNEX 11: SPECIES DATA - WYRE SOUND DIVER CORES

Taxa	TW1_A	TW1_B	TW1_C	TW1_D	WYS10_A	WYS10_B	WYS10_C	WYS10_D
<i>Grania</i> spp.					9	4	16	3
<i>Tubificoides benedii</i>	17	5	18	20				
<i>Tubificoides pseudogaster</i> agg.				1				
Tubificidae spp.								
<i>Pareurythoe borealis</i>						1		
<i>Euphrosine</i> sp.								
<i>Glycera lapidum</i> agg.					5			2
<i>Gyptis propinqua</i>							1	
<i>Gyptis rosea</i>					1			
<i>Hesiospina aurantiaca</i>							4	
<i>Nereimyra punctata</i>								1
<i>Psamathe fusca</i>				1	3			
<i>Eunereis longissima</i>								
<i>Platynereis dumerilii</i>	1	1		1				
<i>Pholoe baltica</i>			1					
<i>Pholoe inornata</i>						2	1	2
<i>Eteone (longa/flava</i> agg.)								
<i>Eulalia viridis</i>								
<i>Eumida sanguinea</i>					1			
<i>Nereiphylla rubiginosa</i>								1
<i>Phyllodoce maculata</i>	1	1						
<i>Pseudomystides limbata</i>			1				2	1
<i>Antinoella finmarchica</i>								
<i>Harmothoe impar</i>							1	2
<i>Harmothoe</i> sp.								
<i>Lepidonotus squamatus</i>								
<i>Malmgrenia marphysae</i>								2
<i>Malmgrenia mcintoshi</i>							1	
Polynoidea sp. (juvenile)								
Polynoidea spp.	1					1		
<i>Pisione remota</i>								
<i>Sphaerodorum gracilis</i>			1	2	8		6	2
<i>Amblyosyllis formosa</i>								
<i>Eurysyllis tuberculata</i>					4		1	1
<i>Odontosyllis gibba</i>			2					2
<i>Parexogone hebes</i>								
<i>Sphaerosyllis taylori</i>								
<i>Sphaerosyllis</i> sp.								
<i>Syllis amica</i>								
<i>Syllis armillaris</i>								
<i>Syllis comuta</i>								
<i>Syllis</i> sp.								
<i>Trypanosyllis (Trypanosyllis) coeliaca</i>					2		2	1
Phyllococida spp.								
<i>Owenia fusiformis</i>	1		3					
<i>Chone kroyeri</i>								
<i>Chone</i> sp.								
<i>Euchone arenae</i>								
<i>Euchone</i> sp.								
<i>Jasmineira elegans</i>					2			1
Sabellinae (<i>Dialychone</i> sp.)							1	1
Sabellidae spp.								
<i>Hydroides norvegica</i>							1	4
<i>Spirobranchus triqueter</i>								1
<i>Poecilochaetus serpens</i>								
<i>Aonides oxycephala</i>		1	1				1	
<i>Aonides paucibranchiata</i>						1	1	
<i>Dipolydora caulleryi</i>								
<i>Dipolydora coeca</i> agg.					1			
<i>Scolelepis fuliginosa</i>								
<i>Prionospio cirrifera</i>								
<i>Prionospio</i> spp.								
<i>Prionospio cirrifera</i>								
<i>Prionospio multibranchiata</i> cf.								
<i>Spio armata</i> agg.								
Spionidae spp.								1
<i>Macrochaeta</i> spp.				2	2		2	4
Ampharetidae sp. (juvenile)							1	
<i>Cirriformia tentaculata</i>	1							
<i>Fiabelligera affinis</i>	2	1		8			1	
<i>Pherusa plumosa</i>							1	
<i>Lagis koreni</i>		1		1				
<i>Pectinaria</i> sp. (juvenile)								
<i>Eupolymnia nesidensis</i>				1	9	2	5	3
<i>Lanice conchilega</i>								
<i>Pista cristata</i>								

Taxa	TW1_A	TW1_B	TW1_C	TW1_D	WYS10_A	WYS10_B	WYS10_C	WYS10_D
<i>Pista mediterranea</i>								
<i>Polycirrus</i> spp.						1		2
<i>Trichobranchus roseus</i>								1
<i>Baldia johnstoni</i>		1						
<i>Capitella</i> spp.	4			4				
<i>Mediomastus fragilis</i>			2					1
<i>Notomastus</i> spp.					5		2	4
<i>Leiochone johnstoni</i>								
<i>Clymenura</i> spp.							1	
<i>Euclymene oerstedii</i>								
<i>Nicomache</i> sp.								
<i>Notoproctus</i> spp.								
<i>Praxillella affinis</i>								
<i>Praxillella gracilis</i>					p			
<i>Praxillella</i> sp.								1
<i>Maldanidae</i> sp.								
<i>Polyophthalmus pictus</i>								
<i>Leitoscoloplos mammosus</i>				1				
<i>Scoloplos (Scoloplos) armiger</i>								
<i>Polygordius</i> spp.					1	2	5	2
<i>Scalibregma inflatum</i>	1							
<i>Amphilocheus manudens</i>								1
<i>Microdeutopus</i> spp.	4							
<i>Atylus vedlomensis</i>					1			
<i>Caprella acanthifera</i>	5	5	2	2	2	1	2	3
<i>Phtisica marina</i>	1	2	1	1			1	3
<i>Cheirocratus sundevalli</i>			3					
<i>Corophium</i> sp.								
<i>Leptocheirus hirsutimanus</i>							1	
<i>Leptocheirus pectinatus</i>	1				7	3	10	8
<i>Leptocheirus pilosus</i>							1	
<i>Peltocoxa damnoniensis</i>						1		
<i>Dexamine spinosa</i>				2				
<i>Dexamine thea</i>	2							
<i>Eusirus longipes</i>								
<i>Iphimedia minuta</i>	1						1	1
<i>Liljeborgia kinahani</i>							1	
<i>Lepidepecreum longicornis</i>								
<i>Lysianassa ceratina</i>			1				6	12
<i>Lysianassa plumosa</i>			1				1	1
<i>Lysianassa</i> spp.							2	
<i>Socarnes filicornis</i>								
<i>Socarnes erythrophthalmus</i>			1				17	
<i>Animocera doc semiserratus</i>					10	10		9
<i>Maera loveni</i>							1	
<i>Othomaera othonis</i>	1	2	4	3	1			2
<i>Microtopos maculatus</i>			8					
<i>Pontocrates altamarinus</i>								
<i>Synchelidium haplocheles</i>		1						
<i>Oedicerotidae</i> sp.								
<i>Gammaropsis maculata</i>								1
<i>Megamphopus cornutus</i>								
<i>Harpinia crenulata</i>							1	
<i>Parametaphoxus fultoni</i>							1	1
<i>Urothoe elegans</i>		3	1					1
<i>Urothoe marina</i>								
<i>Vaunthompsonia cristata</i>		1	2	1	6			9
<i>Galathea intermedia</i>		1						
<i>Hippolyte</i> spp.			2					
<i>Eualus cranchii</i>								
<i>Liocarcinus pusillus</i>								
<i>Anthura gracilis</i>					1	2		
<i>Gnathia vorax</i>								
<i>Gnathiidae (praniza larvae)</i>						1		
<i>Idotea chelipes</i>								1
<i>Janira maculosa</i>						1		3
<i>Uromunna petiti</i>	1				4		2	17
<i>Pleurogonium rubicundum</i>								
<i>Cymodoce truncata</i>				1	2	6	6	8
<i>Lekanesphaera rugicauda</i>								
<i>Nebalia bipes</i>				2				
<i>Nebalia</i> spp.								
<i>Sarsinebalia typhlops</i>								
<i>Leptostraca</i> spp.								
<i>Leptognathia</i> sp.							1	
<i>Ostracoda</i> spp.					1		2	
<i>Achelia</i> sp.							p	
<i>Cirripedia</i> spp.			2	4				

Taxa	TW1_A	TW1_B	TW1_C	TW1_D	WYS10_A	WYS10_B	WYS10_C	WYS10_D
<i>Cradoscrupocellaria reptans</i>								
<i>Crisia aculeata</i>								
<i>Crisidia cornuta</i>								
<i>Tubulipora</i> sp.								
<i>Pomatoschistus</i> sp.								
Asciacea spp.					1			1
Edwardsiidae			2					
<i>Actiniaria</i> spp. (juvenile)							1	
<i>Asterias rubens</i> (juvenile)							3	2
<i>Stichastrella rosea</i>						1		
<i>Asteroidea</i> spp. (juvenile)								
<i>Strongylocentrotus droebachiensis</i>					3			1
<i>Echinocyamus pusillus</i>					1			
<i>Echinoidea</i> sp. (juvenile)							1	
<i>Thyone fusus</i>								
<i>Amphipholis squamata</i>	5		15	6		4	27	34
Amphiuridae spp. (juvenile)								
<i>Ophiopholis aculeata</i>			3				7	9
<i>Ophiocomina nigra</i>								
<i>Ophiothrix fragilis</i>								3
<i>Ophiura</i> sp. (juvenile)								
Ophiuroidea spp. (juvenile)		9			14		4	
<i>Hiatella arctica</i>	2		11	5	1		4	3
<i>Ensis ensis</i>								
<i>Phaxas pellucidus</i>								
<i>Parvicardium pinnulatum</i>					1			
<i>Parvicardium scabrum</i>								
Cardiidae sp.	1							
<i>Abra alba</i>		2		1				
<i>Abra nitida</i>							1	
<i>Abra</i> sp.	1							
<i>Arcopagia crassa</i>					1	1		
<i>Moerella donacina</i>						1		
<i>Tellina</i> sp. (juvenile)								
<i>Goodallia triangularis</i>					1		1	
<i>Limaria hians</i>						1		
<i>Limatula subauriculata</i>					1			
<i>Limatula</i> sp. (juvenile)								
<i>Lucinoma borealis</i>		2						
<i>Mya arenaria</i>	1		1	1				
<i>Mya</i> sp.								
<i>Crenella decussata</i>			2		3	3	1	
<i>Modiolus modiolus</i>	4	7		2	34	9	46	27
<i>Musculus discors</i>							2	
<i>Musculus subpictus</i>	1				1			
Mytilidae spp. (juvenile)								
<i>Anomia ephippium</i>		5	3					2
Pectinidae sp. (juvenile)							1	
<i>Chamelea striatula</i>								
<i>Clausinella fasciata</i>								
<i>Dosinia exoleta</i>								
<i>Dosinia lupinus</i>						1		
<i>Dosinia</i> sp.								
<i>Gouldia minima</i>								1
<i>Ruditapes decussatus</i>								
<i>Polittapes rhomboides</i>								
<i>Timoclea ovata</i>					2			1
<i>Kellia suborbicularis</i>								
<i>Hemilepton nitidum</i>					2		1	
<i>Spisula elliptica</i>								1
<i>Devonia perrieri</i>								
<i>Kurtiella bidentata</i>					1		2	
<i>Thracia villosiuscula</i>						1		2
<i>Caudofoveata</i> sp.								
<i>Aplysia punctata</i>		4				2		
<i>Philine</i> spp.							1	2
<i>Retusa obtusa</i>							1	
<i>Eulima bilineata</i>					1	1	3	
<i>Lacuna parva</i>								
<i>Euspira nitida</i>		1						
<i>Alvania beanii</i>								
<i>Alvania punctura</i>		1			5			1
<i>Alvania zelandica</i>								4
<i>Alvania</i> sp.				1				
<i>Manzonia crassa</i>								
<i>Onoba aculeus</i>			2	4	5		10	5
<i>Onoba semicostata</i>	4	7	1		25		16	3
<i>Pusillina inconspicua</i>								

Taxa	TW1_A	TW1_B	TW1_C	TW1_D	WYS10_A	WYS10_B	WYS10_C	WYS10_D
<i>Pusillina sarsii</i>	3	3		3	9			
<i>Rissoa parva</i>		1	5		2		12	14
<i>Nassarius incrassatus</i>						2		
<i>Nassarius reticulatus</i>								
<i>Raphitoma linearis</i>							1	
<i>Eubranchus</i> spp.							2	
<i>Testudinalia testudinalis</i>						1	1	2
<i>Odostomia plicata</i>								
<i>Dikoleps cutleriana</i>						1	2	4
<i>Gibbula cineraria</i>		2	1		2			1
<i>Gibbula tumida</i>								1
<i>Gibbula umbilicalis</i>								
Gastropoda sp.								
<i>Bivalvia</i> sp.								
<i>Acanthochitona crinita</i>								
<i>Lepidochitona cinerea</i>								
<i>Tonicella marmorea</i>			1					
<i>Tonicella rubra</i>								
<i>Hanleya hanleyi</i>					3			
<i>Leptochiton asellus</i>								
<i>Leptochiton cancellatus</i>					147	67	52	177
<i>Leptochiton scabridus</i>								
<i>Nematoda</i> spp.	2			2	24	23	89	10
<i>Nemertea</i> spp.	1	2	3	1	4	1		4
<i>Platyhelminthes</i> spp.								
<i>Leucosolenia</i> sp.								
<i>Sycon ciliatum</i>					p		p	
<i>Porifera</i> sp.								
<i>Golfingia (Golfingia) elongata</i>						1		
<i>Golfingia (Golfingia) vulgaris vulgaris</i>					16		17	3
<i>Golfingia</i> sp. (juvenile)								
<i>Thysanocardia procera</i>						1		
<i>Corallina officinalis</i>								
<i>Maerl</i> spp.	p	p	p	p	p	p	p	p
<i>Phoronis</i> spp.			7					
<i>Ochrophyta</i> spp.								
<i>Chlorophyta</i> spp.								
<i>Rhodophyta</i> spp.								

Taxa	WYS11_A	WYS11_B	WYS11_C	WYS11_D	WYS12_A	WYS12_B	WYS12_C	WYS12_D
<i>Grania</i> spp.	22	9	5	7	11	3		
<i>Tubificoides benedii</i>								
<i>Tubificoides pseudogaster</i> agg.						4		
<i>Tubificidae</i> spp.						2		
<i>Pareurythoe borealis</i>			1					
<i>Euphrosine</i> sp.				1				
<i>Glycera lapidum</i> agg.	2	1		1	1			1
<i>Gyptis propinqua</i>		2						
<i>Gyptis rosea</i>			1			3	1	
<i>Hesiospina aurantiaca</i>		3		2			1	
<i>Nereimyra punctata</i>		1						
<i>Psamathe fusca</i>	8		5		1	2	2	
<i>Eunereis longissima</i>						1		
<i>Platynereis dumerilii</i>		2			1			
<i>Pholoe baltica</i>	1							
<i>Pholoe inornata</i>		2		1			2	
<i>Eteone (longa/flava</i> agg.)								1
<i>Eulalia viridis</i>				1		1		
<i>Eumida sanguinea</i>		1						
<i>Nereiphylla rubiginosa</i>			4					
<i>Phyllococe maculata</i>								
<i>Pseudomystides limbata</i>	1			1				
<i>Antinoella finmarchica</i>		2						
<i>Harmothoe impar</i>						2		
<i>Harmothoe</i> sp.				1				
<i>Lepidonotus squamatus</i>		1						
<i>Malmgrenia marphysae</i>	1				1			
<i>Malmgrenia mcintoshii</i>								
<i>Polynoidea</i> sp. (juvenile)	1							
<i>Polynoidea</i> spp.								
<i>Pisione remota</i>			1	1				
<i>Sphaerodorum gracilis</i>	3	6	5	3	1	3		1
<i>Amblyosyllis formosa</i>			1					
<i>Eurysyllis tuberculata</i>	2	1	2			3		
<i>Odontosyllis gibba</i>		1						
<i>Parexogone hebes</i>						1		
<i>Sphaerosyllis taylori</i>		1						1
<i>Sphaerosyllis</i> sp.		1						
<i>Syllis amica</i>				7				
<i>Syllis armillaris</i>	1	2		2				
<i>Syllis cornuta</i>	3	1						
<i>Syllis</i> sp.		1						
<i>Trypanosyllis (Trypanosyllis) coeliaca</i>	13	11	3	1				
<i>Phyllococida</i> spp.		1						
<i>Owenia fusiformis</i>					1	1		
<i>Chone kroyerii</i>	1							
<i>Chone</i> sp.		1						
<i>Euchone arenae</i>			1					
<i>Euchone</i> sp.	2							
<i>Jasmineira elegans</i>	1							
<i>Sabellinae (Dialychone</i> sp.)				1				
<i>Sabellidae</i> sp.						1		1
<i>Hydroides norvegica</i>		1		2				
<i>Spirobranchus triqueter</i>			1	2				
<i>Poecilochaetus serpens</i>							1	
<i>Aonides oxycephala</i>				1	1			
<i>Aonides paucibranchiata</i>	4	1		2			1	1
<i>Dipolydora caulleryi</i>						1		
<i>Dipolydora coeca</i> agg.								
<i>Scolecipis fuliginosa</i>						1		4
<i>Prionospio cirrifera</i>					1			
<i>Prionospio</i> spp.					3	7	5	5
<i>Prionospio cirrifera</i>		1						
<i>Prionospio multibranchiata</i> cf.							1	
<i>Spio armata</i> agg.					4			
<i>Spionidae</i> sp.								
<i>Macrochaeta</i> spp.						8	7	1
<i>Ampharetidae</i> sp. (juvenile)								
<i>Cirriformia tentaculata</i>								
<i>Flabelligera affinis</i>								
<i>Pherusa plumosa</i>								
<i>Lagis koreni</i>								
<i>Pectinaria</i> sp. (juvenile)							1	
<i>Eupolymnia nesidensis</i>		3						
<i>Lanice conchilega</i>								1
<i>Pista cristata</i>		1						
<i>Pista mediterranea</i>		1	1					
<i>Polycirrus</i> spp.	6	6		3				

Taxa	WYS11_A	WYS11_B	WYS11_C	WYS11_D	WYS12_A	WYS12_B	WYS12_C	WYS12_D
<i>Trichobranchus roseus</i>								
<i>Baldia johnstoni</i>								
<i>Capitella</i> spp.								
<i>Mediomastus fragilis</i>				2	11	6	4	
<i>Notomastus</i> spp.	2	2		2				
<i>Leiochone johnstoni</i>	3							
<i>Clymenura</i> spp.			1					
<i>Euclymene oerstedii</i>							2	3
<i>Nicomache</i> sp.						1		
<i>Notoproctus</i> spp.		3		9				
<i>Praxillella affinis</i>						2		
<i>Praxillella gracilis</i>		2						
<i>Praxillella</i> sp.								
<i>Maldanidae</i> sp.					p			
<i>Polyopthalmus pictus</i>						1	3	
<i>Leitoscoloplos mammosus</i>								
<i>Scoloplos (Scoloplos) armiger</i>						2	1	2
<i>Polygordius</i> spp.	4	7	1	5		3		
<i>Scalibregma inflatum</i>								
<i>Amphilocheus manudens</i>			1					
<i>Microdeutopus</i> spp.								
<i>Atylus vedlomensis</i>								
<i>Caprella acanthifera</i>	2	3	1	1	12	47	17	4
<i>Phtisica marina</i>		10	2	1	2			1
<i>Cheirocratus sundevalli</i>								1
<i>Corophium</i> sp.			1	1				
<i>Leptocheirus hirsutimanus</i>			33		1			1
<i>Leptocheirus pectinatus</i>	6	2		14	2	15	11	5
<i>Leptocheirus pilosus</i>								
<i>Peltocoxa damnoniensis</i>								
<i>Dexamine spinosa</i>		3			1			
<i>Dexamine thea</i>							1	1
<i>Eusirus longipes</i>							1	
<i>Iphimedia minuta</i>								
<i>Liljeborgia kinahani</i>		1						
<i>Lepidepecreum longicornis</i>								3
<i>Lysianassa ceratina</i>	1	1						
<i>Lysianassa plumosa</i>		1				5	2	
<i>Lysianassa</i> spp.								
<i>Socarnes filicornis</i>							9	
<i>Socarnes erythrophthalmus</i>	29	39		1	13	78		9
<i>Animocera doc semiserratus</i>	18	31		26	4	20	2	1
<i>Maera loveni</i>								
<i>Othomaera othonis</i>		1	32				2	1
<i>Microtopotus maculatus</i>				1				
<i>Pontocrates altamarinus</i>				1				
<i>Synchelidium haplocheles</i>								
<i>Oedicerotidae</i> sp.							1	
<i>Gammaropsis maculata</i>		1					2	
<i>Megamphopus cornutus</i>				1				
<i>Harpinia crenulata</i>						3	4	3
<i>Parametaphoxus fultoni</i>						2		
<i>Urothoe elegans</i>					20	27	20	19
<i>Urothoe marina</i>								5
<i>Vaunthompsonia cristata</i>		13	12	5	31	30	37	3
<i>Galathea intermedia</i>			2		1			
<i>Hippolyte</i> spp.								
<i>Eualus cranchii</i>		1						
<i>Liocarcinus pusillus</i>							1	
<i>Anthura gracilis</i>								
<i>Gnathia vorax</i>		1						
<i>Gnathiidae (praniza larvae)</i>								
<i>Idotea chelipes</i>								
<i>Janira maculosa</i>		3	5	4			1	
<i>Uromunna petiti</i>	3	17	42	45	2	6	5	
<i>Pleurogonium rubicundum</i>			1					
<i>Cymodoce truncata</i>	1	14	18	6				
<i>Lekanesphaera rugicauda</i>							2	
<i>Nebalia bipes</i>			1		1	3		
<i>Nebalia</i> spp.						1		6
<i>Sarsinebalia typhlops</i>					6			
<i>Leptostraca</i> spp.						4		
<i>Leptognathia</i> sp.								
<i>Ostracoda</i> spp.						3	2	1
<i>Achelia</i> sp.								
<i>Cirripedia</i> spp.								
<i>Cradoscrupocellaria reptans</i>				p				
<i>Crisia aculeata</i>	p	p		p				

Taxa	WYS11_A	WYS11_B	WYS11_C	WYS11_D	WYS12_A	WYS12_B	WYS12_C	WYS12_D
<i>Crisidia cornuta</i>		p		p		p		
<i>Tubulipora</i> sp.				p				
<i>Pomatoschistus</i> sp.		1						
Ascidacea spp.		1		1				
Edwardsiidae								
<i>Actiniaria</i> spp. (juvenile)								1
<i>Asterias rubens</i> (juvenile)								
<i>Stichastrella rosea</i>								
<i>Asteroidea</i> spp. (juvenile)	2		1					
<i>Strongylocentrotus droebachiensis</i>			1	1				
<i>Echinocyamus pusillus</i>								
<i>Echinoidea</i> sp. (juvenile)								
<i>Thyone fusus</i>			1					
<i>Amphipholis squamata</i>	15	35	32	13	13	1	5	
Amphiuridae spp. (juvenile)						18	10	8
<i>Ophiopholis aculeata</i>	3	3	1	4	5			
<i>Ophiocarina nigra</i>			9	2				
<i>Ophiothrix fragilis</i>		10	2	2				
<i>Ophiura</i> sp. (juvenile)					1			
<i>Ophiuroidea</i> spp. (juvenile)	1							
<i>Hiatella arctica</i>	1	2	2	1		4	7	
<i>Ensis ensis</i>					1			
<i>Phaxas pellucidus</i>					1			
<i>Parvicardium pinnulatum</i>						1		
<i>Parvicardium scabrum</i>					2	1		1
Cardiidae sp.								
<i>Abra alba</i>								
<i>Abra nitida</i>								
<i>Abra</i> sp.								
<i>Arcopagia crassa</i>								
<i>Moerella donacina</i>	1							
<i>Tellina</i> sp. (juvenile)		2						
<i>Goodallia triangularis</i>			1					
<i>Limaria hians</i>								
<i>Limatula subauriculata</i>		1						
<i>Limatula</i> sp. (juvenile)			1					
<i>Lucinoma borealis</i>								
<i>Mya arenaria</i>								
<i>Mya</i> sp.							1	
<i>Crenella decussata</i>	13	13	8	3				
<i>Modiolus modiolus</i>	58	89	81	28	2	10		
<i>Musculus discors</i>				1				
<i>Musculus subpictus</i>								
Mytilidae spp. (juvenile)							9	4
<i>Anomia ephippium</i>		1						
Pectinidae spp. (juvenile)								
<i>Chamelea striatula</i>		1						
<i>Clausinella fasciata</i>	1	1						
<i>Dosinia exoleta</i>						2		
<i>Dosinia lupinus</i>								
<i>Dosinia</i> sp.	1							
<i>Gouldia minima</i>		1	1					
<i>Ruditapes decussatus</i>		1						
<i>Polittapes rhomboides</i>							1	
<i>Timoclea ovata</i>								
<i>Kellia suborbicularis</i>	2			5				
<i>Hemilepton nitidum</i>		8	2					
<i>Spisula elliptica</i>								
<i>Devonia perrieri</i>					1			
<i>Kurtiella bidentata</i>	1	1	2	2			1	
<i>Thracia villosiuscula</i>		1						
<i>Caudofoveata</i> sp.		1						
<i>Aplysia punctata</i>			3					
<i>Philine</i> spp.	1				1	5	3	1
<i>Retusa obtusa</i>								
<i>Eulima bilineata</i>	1		1	2				
<i>Lacuna parva</i>		1						
<i>Euspira nitida</i>								
<i>Alvania beanii</i>							1	
<i>Alvania punctura</i>								
<i>Alvania zetlandica</i>								
<i>Alvania</i> sp.								
<i>Manzonia crassa</i>		1						
<i>Onoba aculeus</i>		3		1	1	28		
<i>Onoba semicostata</i>	1	4	1	1	2	13	11	4
<i>Pusillina inconspicua</i>						2		
<i>Pusillina sarsii</i>								
<i>Rissoa parva</i>				1	6	14	5	4

Taxa	WYS11_A	WYS11_B	WYS11_C	WYS11_D	WYS12_A	WYS12_B	WYS12_C	WYS12_D
<i>Nassarius incrassatus</i>			2					
<i>Nassarius reticulatus</i>			1					
<i>Raphitoma linearis</i>								
<i>Eubranchus</i> spp.								
<i>Testudinalia testudinalis</i>		1	3					
<i>Odostomia plicata</i>		1						
<i>Dikoleps cutleriana</i>		1	13	8				
<i>Gibbula cineraria</i>			7		4	17	13	2
<i>Gibbula tumida</i>								
<i>Gibbula umbilicalis</i>		2						
<i>Gastropoda</i> sp.							1	
<i>Bivalvia</i> sp.	1							
<i>Acanthochitona crinita</i>						1		
<i>Lepidochitona cinerea</i>						1		
<i>Tonicella marmorea</i>								
<i>Tonicella rubra</i>						1		
<i>Hanleya hanleyi</i>								
<i>Leptochiton asellus</i>			5			5	1	1
<i>Leptochiton cancellatus</i>	12	12	6	4				
<i>Leptochiton scabridus</i>	7							
<i>Nematoda</i> spp.	30	72	21	29	1	8	8	2
<i>Nemertea</i> spp.	6	2		3	2	3	9	1
<i>Platyhelminthes</i> spp.			1				1	
<i>Leucosolenia</i> sp.			p					
<i>Sycon ciliatum</i>	p	p						
<i>Porifera</i> sp.		p						
<i>Golfingia (Golfingia) elongata</i>								
<i>Golfingia (Golfingia) vulgaris vulgaris</i>	16	16	5	19			1	
<i>Golfingia</i> sp. (juvenile)						1		
<i>Thysanocardia procera</i>								
<i>Corallina officinalis</i>	p							
<i>Maerl</i> spp.	p	p	p	p	p	p	p	p
<i>Phoronis</i> spp.								
<i>Ochrophyta</i> spp.			p					p
<i>Chlorophyta</i> spp.	p	p		p	p	p	p	p
<i>Rhodophyta</i> spp.			p	p		p	p	p

ANNEX 12: CHARACTERISTIC TAXA FROM SIMPROF GROUPS - WYRE SOUND DIVER CORES

Group A (Average similarity: 38.58%) (samples TW1A, TW1B, TW1C, TW1D)				
Dominant Taxa	Av. Abund	% of Samples	Contrib%	Cum.%
<i>Tubificoides benedii</i>	15	100	18.28	18.28
<i>Caprella acanthifera</i>	3.5	100	9.04	27.32
<i>Othomaera othonis</i>	2.5	100	7.19	34.51
<i>Amphipholis squamata</i>	6.5	75	6.43	40.95
<i>Nemertea</i> spp.	1.75	100	6.14	47.09
<i>Phtisica marina</i>	1.25	100	5.77	52.86
<i>Pusillina sarsii</i>	2.25	75	5.38	58.24
<i>Modiolus modiolus</i>	3.25	75	5.02	63.26
<i>Hiatella arctica</i>	4.5	75	4.66	67.92
<i>Onoba semicostata</i>	3	75	3.94	71.85
<i>Flabelligera affinis</i>	2.75	75	3.53	75.38
<i>Platynereis dumerilii</i>	0.75	75	3.11	78.49
<i>Mya arenaria</i>	0.75	75	2.79	81.28

Group B (Average similarity: 45.37%) (samples WYS12A, WYS12B, WYS12C, WYS12D)				
Dominant Taxa	Av. Abund	% of Samples	Contrib%	Cum.%
<i>Urothoe elegans</i>	21.5	100	11.3	11.3
<i>Vaunthompsonia cristata</i>	25.25	100	8.75	20.05
<i>Caprella acanthifera</i>	20	100	7.01	27.06
<i>Rissoa parva</i>	7.25	100	5.47	32.53
<i>Prionospio</i> spp.	5	100	5.04	37.57
<i>Leptocheirus pectinatus</i>	8.25	100	4.96	42.53
<i>Gibbula cineraria</i>	9	100	4.82	47.35
<i>Onoba semicostata</i>	7.5	100	4.76	52.11
<i>Socarnes erythropthalmus</i>	25	75	4.17	56.27
<i>Nematoda</i> spp.	4.75	100	3.52	59.8
<i>Amphiuridae</i> spp. (juvenile)	9	75	3.48	63.28
<i>Animoceradocus semiserratus</i>	6.75	100	3.25	66.53
<i>Nemertea</i> spp.	3.75	100	3.14	69.67
<i>Philine</i> spp.	2.5	100	2.8	72.47
<i>Mediomastus fragilis</i>	5.25	75	2.45	74.92
<i>Harpinia crenulata</i>	2.5	75	2.06	76.98
<i>Uromunna petiti</i>	3.25	75	1.88	78.87
<i>Macrochaeta</i> spp.	4	75	1.73	80.6

Group C (Sample WYS10B)		
Dominant Taxa	Abundance	Cum. %
<i>Leptochiton cancellatus</i>	67	41.61
<i>Nematoda</i> spp.	23	55.90
<i>Animoceradocus semiserratus</i>	10	62.11
<i>Modiolus modiolus</i>	9	67.70
<i>Cymodoce truncata</i>	6	71.43
<i>Grania</i> spp.	4	73.91
<i>Amphipholis squamata</i>	4	76.40
<i>Leptocheirus pectinatus</i>	3	78.26
<i>Crenella decussata</i>	3	80.12
<i>Pholoe inornata</i>	2	81.37
<i>Eupolymnia nesidensis</i>	2	82.61
<i>Polygordius</i> spp.	2	83.85
<i>Anthura gracilis</i>	2	85.09

Group D (Sample WYS11C)		
Dominant Taxa	Abundance	Cum. %
<i>Modiolus modiolus</i>	81	20.35
<i>Uromunna petiti</i>	42	30.90
<i>Leptocheirus hirsutimanus</i>	33	39.20
<i>Othomaera othonis</i>	32	47.24
<i>Amphipholis squamata</i>	32	55.28
<i>Nematoda</i> spp.	21	60.55
<i>Cymodoce truncata</i>	18	65.08
<i>Dikoleps cutleriana</i>	13	68.34
<i>Vaunthompsonia cristata</i>	12	71.36
<i>Ophiocomina nigra</i>	9	73.62
<i>Crenella decussata</i>	8	75.63
<i>Gibbula cineraria</i>	7	77.39
<i>Leptochiton cancellatus</i>	6	78.89
<i>Grania</i> spp.	5	80.15
<i>Psamathe fusca</i>	5	81.41
<i>Sphaerodorum gracilis</i>	5	82.66
<i>Janira maculosa</i>	5	83.92
<i>Leptochiton asellus</i>	5	85.18
<i>Golfingia (Golfingia) vulgaris vulgaris</i>	5	86.43

Group E (Average similarity: 50.69%) (samples WYS10A, WYS10C, WYS10D, WYS11A, WYS11B, WYS11D)				
Dominant Taxa	Av. Abund	% of Samples	Contrib%	Cum.%
<i>Modiolus modiolus</i>	47.00	100.00	9.35	9.35
<i>Nematoda</i> spp.	42.33	100.00	7.73	17.08
<i>Leptochiton cancellatus</i>	67.33	100.00	6.59	23.66
<i>Golfingia (Golfingia) vulgaris vulgaris</i>	14.50	100.00	5.37	29.03
<i>Amphipholis squamata</i>	20.67	83.33	4.46	33.49
<i>Grania</i> spp.	11.00	100.00	4.19	37.68
<i>Animoceradocus semiserratus</i>	15.67	83.33	3.88	41.56
<i>Leptocheirus pectinatus</i>	7.83	100.00	3.73	45.29
<i>Uromunna petiti</i>	14.67	100.00	3.49	48.78
<i>Sphaerodorum gracilis</i>	4.67	100.00	2.89	51.66
<i>Cymodoce truncata</i>	6.17	100.00	2.74	54.4
<i>Polygordius</i> spp.	4.00	100.00	2.53	56.94
<i>Onoba semicostata</i>	8.33	100.00	2.39	59.32
<i>Notomastus</i> spp.	2.83	100.00	2.38	61.7
<i>Caprella acanthifera</i>	2.17	100.00	2.11	63.81
<i>Trypanosyllis (Trypanosyllis) coeliaca</i>	5.00	100.00	2.1	65.91
<i>Ophiopholis aculeata</i>	4.33	83.33	2	67.92
<i>Nemertea</i> spp.	3.17	83.33	1.89	69.8
<i>Crenella decussata</i>	5.50	83.33	1.8	71.6

ANNEX 13: LIMARIA MEASUREMENTS

Sample	L	W	B	Notes
FS 1.1	59	50	93	
FS 1.1	28	29	48	
FS 1.1	37	31	61	
FS 1.1				Present
FS 1.1	25	20	46	
FS 1.1				Present
FS 1.1	20	17	37	
FS 1.1	21	15	44	
FS 1.3	60	61	101	
FS 1.3	65	70	105	
FS 1.3	35	27	55	
FS 1.3	22	17	40	
FS 1.3	70	75	110	
FS 1.3	11	9	18	
FS 1.5	30		46	Damaged
FS 1.5	39	38	63	
FS 1.5	67		90	Damaged
FS 1.5	40	35	61	
FS 1.5	66	70	108	
FS 1.5	69	80	111	
FS 1.5				Damaged
FS 3.3	19	19	29	
FS 3.3	38	26	64	
FS 3.4	60	60	102	
FS 3.4	39	55	63	
FS 3.4	30	24	48	
FS 3.4	29	28	51	
FS 3.4	20	22	40	
FS 5.1	33	30	52	
FS 5.3	69	60	101	
FS 5.3	30	20	50	
FS 5.3				Damaged
FS 5.3	57	60	90	
FS 5.3	17	11	33	
FS 5.4	67	62	107	
FS 5.4	30	16	52	
FS 5.4	12	5	24	
FS 5.4	24	13	35	
FS 5.4				Damaged
FS 5.5	57	62	94	
FS 5.5	20	13	37	
FS 5.5	16	10	30	
FS 5.6	62	59	94	
FS 5.6				Damaged
FS 5.6	20	15	38	
FS 5.6	60	59	113	
FS 5.6	26	16	44	
FS 5.6	65	59	110	
FS 6.6	28	15	52	
FG - 10	40	32	62	

Sample	L	W	B	Notes
FG - 10	35	27	52	
FG - 10	46	42	76	
FG - 10	38	39	61	
FG - 10			51	Damaged
FG - 10	32	29	50	
FG - 10	36	29	59	
FG - 10	45	39	72	
FG - 10	50	45	82	
FG - 10	33	30	55	
FG - 10	26	19	42	
FG - 10	70		126	Damaged
FG - 10	33	20	60	
FG - 10	28	23	45	
FG - 10	27	19	42	
FG - 10	22	15	36	
FG - 10	30	22	53	
FG - 10	25	19	40	
FG - 10	28		50	Damaged
FG - 10	22	14	39	
FG - 10	11	3	17	
FG - 10	19	10	32	
FG - 10	13	8	23	
FG - 10	6	2	12	
FG - 10	22		43	Damaged
FG - 10	12		25	Damaged
FG - 10	5	1	10	
FG - 24	71	60	110	
FG - 24	47	42	80	
FG - 24	74	62	117	
FG - 24	44	35	80	
FG - 24	58	52	94	
FG - 24	40	30	72	
FG - 24	22	12	41	
FG - 24	24	19	50	
FG - 24	28	20	43	
FG - 24	32	20	51	
FG - 24	23	20	43	
FG - 24	27	20	42	
FG - 24	27	20	49	
FG - 24	26	16	39	
FG - 24	26		43	Damaged
FG - 24	25	15	42	
FG - 24	21	17	39	
FG - 24	19	10	40	
FG - 24	17	11	39	
FG - 24	18	15	37	
FG - 24	23	16	42	
FG - 24	24	17	45	
FG - 24	25	17	42	
FG - 24	27	16	43	
FG - 24	23	15	39	

Sample	L	W	B	Notes
FG - 24	28	20	41	
FG - 24	23	10	35	
FG - 24	20	9	36	
FG - 24	19	15	37	
FG - 24	13	6	28	
FG - 24	26	18	43	
FG - 24	14	2	20	
FG - 24	24	18	39	
FG - 24	19	10	32	
FG - 24				Damaged
FG - 24	8	1	17	
FG - 25	40	23	64	
FG - 25	31	21	49	
FG - 25	23	8	36	
FG - 25	17	9	23	
FG - 27	32		57	Damaged
FG - 27	35	26	58	
FG - 27	35	22	50	
FG - 27	33	26	60	
FG - 27	45	35	76	
FG - 27	30	17	49	
FG - 27	39	28	63	
FG - 27	37	27	62	
FG - 27	24	12	38	
FG - 27				Damaged
FG - 27	51	40	83	
FG - 27	43	32	75	
FG - 27	59	39	95	
FG - 27	27	20	51	
FG - 27	35		59	Damaged
FG - 27	52	42	91	
FG - 27	41	31	68	
FG - 27	14	3	20	
FG - 27	23	18	43	
FG - 27	28	20	51	
FG - 27	29	Dam	49	
FG - 27	13	7	23	
FG - 27	13	9	28	
FG - 27	18	8	24	
FG - 27	18	16	34	
FG - 27	11	4	18	
FG - 27	11	8	19	
FG - 27	3	1	8	
FG - 27				Damaged
FG - 27	9	2	16	
FG - 27	11	2	16	
FG - 27	4	2	16	
FG - 27	2	1	10	
FG - 27	1	1	4	
FG - 27				Damaged
FG - 27	1	1	3	

Sample	L	W	B	Notes
FG - 28	71	58	116	
FG - 28	70	53	113	
FG - 28	32	23	58	
FG - 28	53	34	81	
FG - 28	41	28	64	
FG - 28	31	23	56	
FG - 28	29	17	48	
FG - 28	30	20	51	
FG - 28	33	22	50	
FG - 28	35	22	55	
FG - 28	28	20	50	
FG - 28	30	20	49	
FG - 28	20	12	40	
FG - 28	20	9	32	
FG - 28	12	6	22	
FG - 28	13	5	20	
FG - 28	8	2	15	

ANNEX 14: MAERL MEASUREMENTS

Maximum length of maerl fragments in mm (max. length >5 mm)

ARRAN									
D3-G7	D5-G4	D3-G8	D3-G4	D1-G8	D5-G3	D1-G5	D3-G10	D1-G7	D3-G9
10	19	7	-	8	12	6	14	5	11
10	11			10		5	16	10	11
11	11			6		5	17	6	14
8				7			17	6	12
				9			13	5	12
							12		12
							20		11
							13		7
							12		8
							12		7
							16		12
							11		6
							7		17
							15		14
							12		10
							13		
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							8		
							11		
							13		
							10		
FYNE									
FG-03	FG-06	FG-23	FG-27	FG-09	FG-05				
11	14	26	8	-	4				
	17	27		Encrusting	6				
		32			6				
		14							
		15							
		15							
		17							
		11							
		10							

WYRE (Samples in red were sub-sampled 1/4)															
TW1	TW1	TW1	TW1	WYS10	WYS10	WYS10	WYS10	WYS11	WYS11	WYS11	WYS11	WYS12	WYS12	WYS12	WYS12
A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
37	45	34	63	30	23	29	22	19	39	33	30	14	20	20	13
16	22	35	29	18	15	20	19	15	13	28	16	11	13	13	10
17	28	16	38	19	27	26	18	22	28	23	29	14	14	22	9
17	20	14	18	18	15	15	17	19	15	14	17	14	15	15	21
18	23	19	22	16	10	28	21	22	23	17	30	15	20	15	10
19	17	19	13	20	16	15	23	19	20	22	18	12	15	12	9
10	67	22	11	19	15	29	23	33	38	23	23	24	27	25	10
18	49	22	18	18	12	16	15	19	24	29	21	12	17	13	14
10	38	20	15	20	12	23	25	18	24	14	30	21	16	24	15
13	21	19	25	17	24	13	24	18	22	13	23	17	22	12	
9	19	17	15	18	11	31	21	17	28	18	21	14	15	17	
12	29	20	15	14	12	14	19	14	17	13	18	11	18	11	
10	21	21	20	26	22	26	27	22	15	15	30	15	16	15	
10	20	20	16	13	14	12	19	22	18	13	16	20	12	13	
9	28	18	16	24	18	20	24	25	24	13	23	13	13	14	
9	14	20	14	18	29	13	20	15	19	13	14	16	19	14	
	14	16	12	16	16	21	20	29	20	16	19	15	24	20	
	18	18	17	18	17	12	17	17	15	12	21	14	15	19	
	15	11	29	21	17	23	20	23	23	10	25	10	18	15	
	11	15	16	18	15	16	20	21	14	15	13	11	16	11	
	11	15	28	20	11	22	21	11	23	12	28	10	20	12	
	13	16	9	13	27	17	16	23	15	15	14	9	13	14	
	11	13	9	25	13	24	22	20	19	13	20		17	13	
	12	10	8	17	13	22	18	17	19	14	18		14	14	
	12	18	9	31	19	40	28	16	28	14	25		10	16	
	11	9	9	23	20	17	24	28	14	14	15		11	16	
	12		8	18	13	16	19	17	18	21	19		10	17	
	13		11	18	24	19	16	19	15	16	15		13	15	
	13		8	20	16	15	20	16	11	18	20		18	20	
	11			16	18	16	17	22	14	30	14		17	11	
	11			17	30	23	23	17	15	24	25		19	16	
	8			23	13	18	20	22	17	11	17		12	11	
	11			19	21	16	26	16	18	23	17		16	13	
	9			18	11	17	23	22	14	20	24		12	18	
	19			16	26	24	35	16	13	24	28		15	17	
	11			22	18	14	18	18	23	25	17		11	14	
	16			20	21	17	25	11	14	13	19		16	19	
	8			12	16	17	17	18	20	15	19		16	13	
	8			20	20	25	21	17	16	16	20		16	15	
	9			12	32	18	15	14	16	15	20		13	18	
	10			22	16	27	25	16	21	15	30		26	12	
	8			16	14	21	12	12	15	19	16		11	13	
	15			29	26	17	23	12	18	14	15		16	10	
	10			14	16	14	15	13	25	12	18		11	12	
	8			23	25	16	18	13	15	29	22		25	13	
	11			10	13	19	27	12	15	15	15		12	16	
	19			18	17	16	22	15	17	23	16		16	15	
	8			10	16	11	13	13	18	13	19		11	30	
	11			20	19	19	18	21	12	25	20		25	15	
	14			15	13	19	18	11	19	25	17		11	15	
	16			24	16	16	18	18	11	15	20		16	14	
	12			14	15	18	13	14	20	16	19		11	11	
	20			22	16	22	21	16	14	18	18		20	13	
				14	16	19	18	13	16	12	17		11	20	
				29	18	16	17	17	12	9	16		14		
				19	12	16	27	17	16	16	19		11		
				20	16	14	15	16	15	25	20		24		
				15	10	16	17	19	15	25	13		10		
				18	14	14	17	14	15	13	19		17		
				14	10	15	21	20	14	14	18		10		
				18	17	15	19	12	21	11	19		15		
				14	15	13	18	23	18	15	15		10		
				20	16	16	22	14	21	20	16		13		
				12	13	13	15	23	20	18	11		10		
				13	15	20	18	10	22	13	18		17		
				11	14	13	13	20	25	20	17		11		
				22	20	16	20	11	23	12	24		21		
				11	13	15	15	19	16	20	14		11		
				17	22	14	21	16	17	20	20		15		
				10	13	14	18	36	14	14	15		14		
				21	15	15	25	11	24	15	20		10		
				20	16	14	19	16	15	15	14		18		
				14	13	15	30	14	17	18	19		12		
				19	25	13	12	22	13	15	13		16		

WYRE (Samples in red were sub-sampled 1/4)															
TW1	TW1	TW1	TW1	WYS10	WYS10	WYS10	WYS10	WYS11	WYS11	WYS11	WYS11	WYS12	WYS12	WYS12	WYS12
A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
				15	14	17	16	15	23	15	18		10		
				11	18	10	12	20	15	12	15		15		
				14	11	15	19	11	14	29	13		10		
				14	12	14	16	17	12	14	11		18		
				12	11	12	21	10	11	17	20		16		
				11	11	16	26	20	11	22	10		14		
				14	11	22	19	12	14	11	19		11		
				11	23	12	24	16	12	13	11		11		
				18	11	15	21	17	16	29	16		15		
				12	14	14	18	15	12	15	12		18		
				16	13	13	23	9	15	11	15		13		
				13	15	12	12	12	11	12	13		12		
				20		12	10	14	12	12	12		19		
				13		11	14	14	11	15	11		14		
				17		11	11	10	15	29	18		12		
				10		10	13	17	11	13	11				
				11		10	22	13	11	14	13				
				11		14	14	10	14	23	14				
				12		12	10	15	12	16	10				
				20		10	14	12	12	17	12				
				16		11	10	10	12	10	11				
				12		15	13	15	11	14	11				
				12		11	21	10	16	25	14				
				16		11	11	13	11	20	12				
				15		15	17	11	18	15	11				
				20		11	13	10	11	30	11				
				13		17	11	12	14	13	10				
				12		10	18	17	11	16	12				
				10		12	17	10	12	18	12				
				10		11	11	11	15	13	11				
				10		11	17	11	11	15	11				
				15		10	16	9	14	28	12				
				17		10	10	11	16	13	11				
				10		11	17	11	11	11	13				
				20		10	11	11	19	18	17				
				13		9	11	10	14	12	13				
				12		12	14	11	19	12	14				
				11		10	13	12	11	16	15				
				10		10	12	10	11	15	11				
				14		10	18	12	13	10	11				
				14		10	13	10	11	23	13				
				18		10	16	10	11	12	13				
				12		11	20	11	11	13	13				
				11		10	17	16	10	10	17				
				12		10	15	14	12	12	12				
				13		10	12	12	11	14	10				
				11		10	11	11	15	26	15				
				9		10	10	15	11	17	11				
				10		13	12	11	14	35	11				
				9		10	19	11	11	19	17				
				10		10	12	11	15	15	14				
				10		14	12	12	16	18	11				
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				11		11	11	16	14	15	14				
				11		10	14	11	11	23	10				
				23		11	14	16	11	17	11				
						10	11	9	13	9	13				
						11	13	11	12	11	11				
						10	18	11	12	15	12				
						11	13	14	14	11	13				
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						13	17	13		14	15				
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						15	16	13		17	10				
						11	17	9		21	13				
						11	11	18		11	15				
						11	11	10		30	10				
						10	13	11		12	11				
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						13	14	13		29	10				
						9	13	11		20	13				
						10	13	17		11	13				
						13	14	9		26	12				
						11	13	12		16	15				
						11	13	9		24	14				

WYRE (Samples in red were sub-sampled 1/4)															
TW1	TW1	TW1	TW1	WYS10	WYS10	WYS10	WYS10	WYS11	WYS11	WYS11	WYS11	WYS12	WYS12	WYS12	WYS12
A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
							11	14		18	11				
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Policy and Advice Directorate, Great Glen House,
Leachkin Road, Inverness IV3 8NW
T: 01463 725000

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