Assessment of the soft sediment fauna five years after construction of the Princess Amalia wind farm

Thomas Vanagt, Liesbeth Van de Moortel, Jannes Heusinkveld, Marco Faasse, Rafael Pérez-Domínguez and Koen Lock

October 2013 – final

Vanagt T., Van de Moortel L., Heuskinkveld J., Faasse M., Pérez-Domínguez R. and Lock K.

Assessment of the soft sediment fauna five years after construction of the Princess Amalia wind farm

eCOAST report 2012011-2

Commissioned by	Prinses Amaliawindpark
Status	final
Project number	2012011
Report number	2012011-2
Publication date	October 2013
Title	Assessment of the soft sediment fauna five years after construction of the Princess Amalia wind farm
Authors	Dr. T.J. Vanagt, Drs. L. Van de Moortel, Ing. J. Heusinkveld, Ir. M. Faasse, dr. R. Pérez-Domínguez and Dr. K. Lock
Contributors	Sietse Bouma (BuWa), Mike Bailey and Chris Baulcom (IECS)
To cite as	Vanagt T., Van de Moortel L., Heusinkveld J., Faasse M., Pérez-Domínguez R. and Lock K. (2013). Assessment of the soft sediment fauna five years after construction of the Princess Amalia wind farm. eCOAST report 2012011-2.
Approved by:	Dr. T.J. Vanagt – director
Checked by:	Prof. Dr. J. Mees – director international development

Disclaimer

Contents

Figures

Tables

SUMMARY

During the present study, the macrobenthic fauna was investigated five years after the construction of the Princess Amalia Wind Farm. In March 2012, samples were taken with a boxcorer and a dredge in the turbine site (QT), an adjacent buffer zone (QAW), a northern (QCN) and a southern reference site (QCS). These sites were also sampled in 2003 during the baseline study. Samples were taken at least 150 m away from the turbines.

Sediment characteristics of the turbine site were intermediate between the northern and the southern reference area. Density and diversity of the benthic fauna in the boxcore samples of the turbine site were also intermediate between the northern and the southern reference site, whereas biomass values did not differ significantly between areas.

Density, diversity and biomass in the dredge samples, which contain the larger K-strategic species, also did not differ between areas. In addition, no systematic differences in shell damage and length-frequency distribution of the common bivalve species could be detected between the areas. It can therefore be concluded that the installation of the Princess Amalia Wind Farm did not yet affect the soft sediment benthic fauna, at least not for samples taken further than 150 m from the turbines.

SAMENVATTING

In voorliggend onderzoek werd de macrobenthosgemeenschap in het Prinses Amaliawindmolenpark onderzocht vijf jaar na de constructie van het park. In maart 2012 werden met een boxcore en bodemshaaf monsters genomen in het windmolenpark (QT), in een bufferzone rond het windmolenpark (QAW) en in een Noordelijk (QCN) en Zuidelijk (QCS) referentiegebeid. Deze gebieden kwamen overeen met de monsternamepunten uit het baseline onderzoek uit 2003.

De sedimenteigenschappen in het windmolenpark vertoonden een internmediair beeld tussen het Noordelijk en Zuidelijk referentiegebied. Hetzelfde patroon werd gevonden voor de abundantie en diversiteit van macrofauna, verzameld met de boxcore; biomassa was gelijkaardig over alle bemonsterde gebieden.

Densiteit, biodiversiteit en biomassa van de fauna verzameld met de bodemschaaf, een apparaat wat eerder geschikt is voor het bemonsteren van soorten met een K-strategie, was niet verschillend tussen alle bemonsterde gebieden. Daarnaast werden geen significante verschillen gevonden in beschadigingen aan schelpen – een indicatie voor visserijdruk – of lengte-frequentie distributie van de meest voorkomende tweekleppigen.

Uit dit onderzoek wordt geconcludeerd dat de bouw van het Prinses Amaliawindmolenpark, en de daarbij horende maatregelen zoals het verbod op visserij, nog geen effect heeft gehad op de bodemfauna in het gebied, uitgaande van monsters genomen op minstens 150 m afstand van de windmolens.

1. INTRODUCTION

As part of the Monitoring- and Evaluation Program (MEP) of the Princess Amalia Wind Farm (PAWP), a number of research topics were identified. One of those topics was to characterise the benthic invertebrates living in the seabed. In 2003, a baseline study of the subtidal benthic fauna was carried out by the Institute of Estuarine and Coastal Studies (University of Hull, UK). Samples were taken in the proposed Princess Amalia Wind Farm turbine site (QT), an adjacent buffer zone (QAW) and two reference sites situated north (QCN) and south (QCS) of the site. Results from this baseline study were reported in February 2004 (Jarvis *et al.*, 2004).

Five years after the construction of the Princess Amalia Wind Farm (2012), a new monitoring study was carried out in the same four areas (QT, QAW, QCN and QCS). The object of this report is twofold:

- to present the results of the benthic infauna monitoring;
- to contrast the new findings with the baseline condition prior to the construction of the wind farm.

1.1 Princess Amalia Wind Farm

The Princes Amalia Wind Farm is the second offshore wind farm in the Dutch sector of the North Sea and the first to be located outside the 12 nautical mile limit. PAWP is located in Block Q7 of the Dutch Continental Shelf, at a distance of 23 to 26.4 km from the shore (off the coast of IJmuiden, The Netherlands), in water depths between 19 and 24 m. A total of 60 turbines (4.0 m diameter monopole foundations) were placed in an area of 17 km². The minimum distance between turbines is 550 m. The Princess Amalia Wind Farm has a designed power output of 435 GWh per annum.

The installation of the foundations and transition pieces took place from October 2006 till May 2007. Foundations measuring 54 metres, a diameter of 4 metres and 320 tons in weight were sunk into the sea-floor. The transition pieces weighing 115-tons were placed on the foundations using the Jumping Jack. To support the turbine foundations, a 15 m diameter scour-protection consisting of mixed size rocks was deposited on the soft sediment around the base of each monopile. Cables and wind turbines were installed from May 2007 to April 2008. The wind farm is operational since June 2008.

1.2 Scope of the study

The aim of this study is to evaluate the eventual impacts arising from the construction of the Princess Amalia Wind Farm. Specifically, the effects it may have on occurrence and density of the invertebrates living on the seabed. Comparisons are made between the baseline study and the current situation with respect to infaunal assemblage, epifaunal communities, faunal characteristics, evidence of anthropogenic effects (i.e. shell damage and shorter shells due to trawling) and sediment types. By comparing the results obtained in the baseline study with the results of the present study and by comparing the data from the turbine site with the reference areas, we intend to assess whether the installation of the wind farm caused effects on the soft sediment benthos. A second related objective is to assess whether the wind farm provides shelter for certain longer-lived species like large bivalves and sea urchins. Also shell damage and length-frequency distribution of the bivalves are assessed as it can be expected that less shells with scars and larger individuals can be found when the disturbance caused by trawling decreases (Witbaard & Klein, 1994).

2. Material and Methods

2.1 Survey design

For the present study, the same sampling strategy was chosen as used in the baseline study (Jarvis *et al.*, 2004), to facilitate comparison of the data. The baseline design identified reference areas similar in sediment characteristics to those present under the footprint of the wind farm. Sediment texture (i.e. median particle size) was thought to be one of the main structuring factors of benthic fauna distribution (Gray & Elliot, 2009).

Two references areas were used, one 40 km to the north of the turbine site (QCN) and another 30 km to the south (QCS). Both reference areas have the same distance to the shore as the turbine site. In addition, three pairs of sampling sites were located around the windfarm area (QAW), to reveal either a possible impact of increased fishing activity on the margins of the exclusion zone or a positive spill-over effect from inside the windfarm area. In the turbine site, samples were always taken at least 150 m away from the monopoles.

The projected sampling sites are indicated in Figure 1.

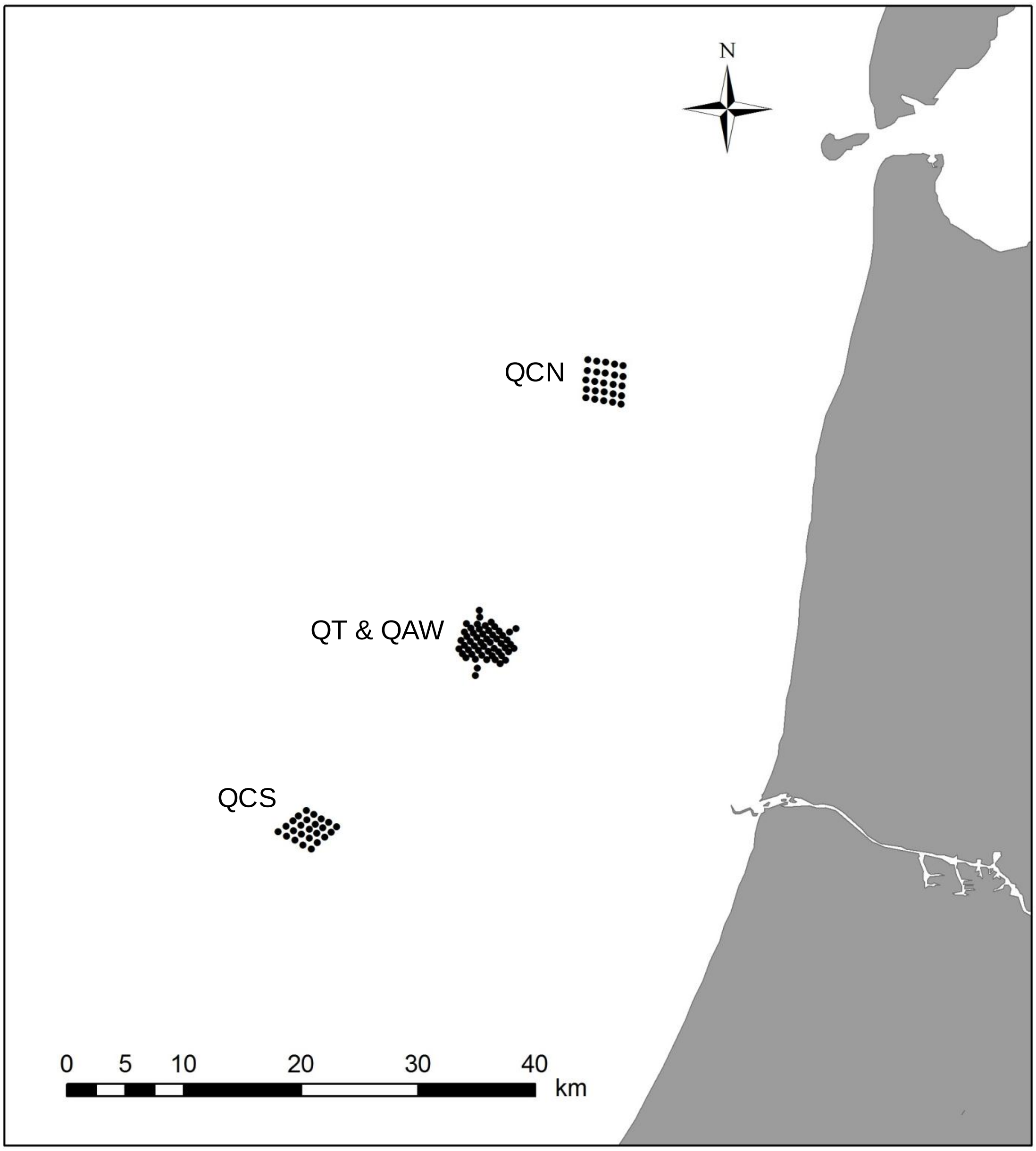

Figure 1: Projected sampling sites in the Dutch Coastal zone.

2.2 Sampling methods

2.2.1 Boxcore sampling

For the survey of the small infaunal invertebrates, the Reineck box with a circular corer ($0.078m^2$ sampling surface)[1] was chosen. A total of 199 samples of the projected 200 samples (see further) were collected at 103 stations (79 non-replicated stations and 24 replicated stations) from the turbine site, the adjacent buffer zone and the two reference (control) sites.

The overall sampling effort for the monitoring surveys was as follows (Figure 2):

Non-replicated stations

- Turbine site: 39 stations (39 samples)
- Northern reference area: 20 stations (20 samples)
- Southern reference area: 20 stations (20 samples)

Replicated stations:

- Turbine site: 8 stations (40 samples)
- Adjacent waters: 6 stations (30 samples)
- Northern reference area: 5 stations (25 samples)
- Southern reference area: 5 stations (25 samples)

At every pre-detemined sampling station, the Boxcore was lowered and a sample was taken. Upon retrieval of the sampler, the contents of the box corer's sample holder were inspected by a qualified surveyor and the quality of the sample was assessed. Samples disturbed or too low in volume were rejected. Valid samples were washed over a 1 mm sieve. The residue was photographed for possible future reference and stored in a HdPE jar with suitable fixing and preserving solution (4% formo-saline solution).

Boxcore samples were taken during one week, from the 12th of March onwards. Samples were taken in a north to south direction. Only one station (QT17) was skipped, because it was located only 10 m from the cable to the OHVS.

Taking replicate samples turned out to be difficult due to tidal currents, which made it impossible to stay at the exact same location while collecting the replicates. However, thanks to the favourable weather conditions experienced during the survey, all replicate samples could be collected after the non-replicate samples; the extra sampling day planned to collect all possibly remaining replicate samples was hence not used.

---

[1] The Reineck box corer consists of a round metal box (29,5 cm diameter), which is attached to a weighted tubular steel frame. Upon deployment and when contact is made with the seabed, the projecting box is driven into the sediment by the weight of the corer. Once the tension has been taken by the lifting cable, a mechanism rotates a counterbalanced arm that swings a cutting plate through the sediment and under the box to retain the sediment contained within. The sampling device is then lifted from the seabed and through the water column to the survey vessel. The cutting plate has a rubberised upper surface, which seals the sediment sample within the box corer by sitting flush against the lower edge of the corer during the recovery from the seabed to the vessel.

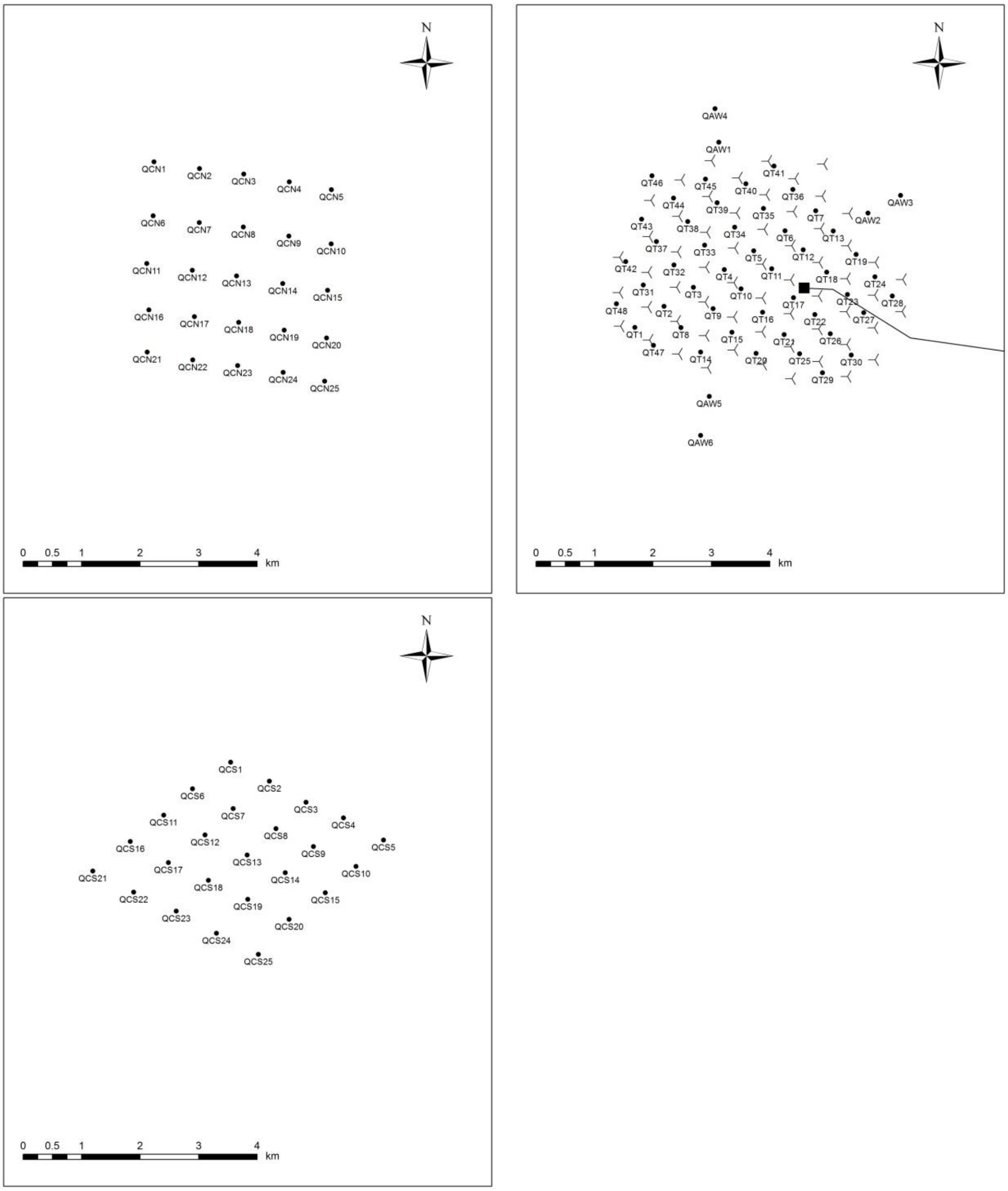

Figure 2: Sample positions of the boxcores in the four areas.

2.2.2 Triple D Dredge sampling

To survey less abundant and larger infaunal invertebrates, the Triple D dredge was chosen. This dredge has a cutting plate with a width of 1 m and a penetration depth of 15 cm, the retaining net has a mesh size of 6 mm. The dredge was towed for a distance of 100 m, which was the optimal sample size. Trial tows of 50 m proved to be too short and trial tows of 200 m were longer than necessary. A total of 39 samples were collected at 39 different stations.

The overall sampling effort for the monitoring surveys was as follows (Figure 3):

- Turbine site: 15 dredge tows
- Adjacent waters: 6 dredge tows
- Northern reference area: 9 dredge tows
- Southern reference area: 9 dredge tows

At the pre-determined sampling stations, the dredge was lowered and towed over a distance of 100 m through the seabed. After 100 m, the dredge was hauled in. Once on deck, the retaining net was emptied and, if approved to be a successful sample, the content of the net was placed in a sample container and photographed for possible future reference. All dredge samples were sorted onboard, identified to species level if possible and measured. Depending on the total volume of the sample, a subsample was taken. The processed part of the sample was fixated with a 4% formo-saline solution.

Dredge samples were taken from the 25th till 28th of March in the order QCN, QT, QCS and QAW. Samples were temporarily stored on ice in labeled, closed buckets till processing on land. At the end of each sampling day, samples were brought to land to be processed by the processing crew the next day.

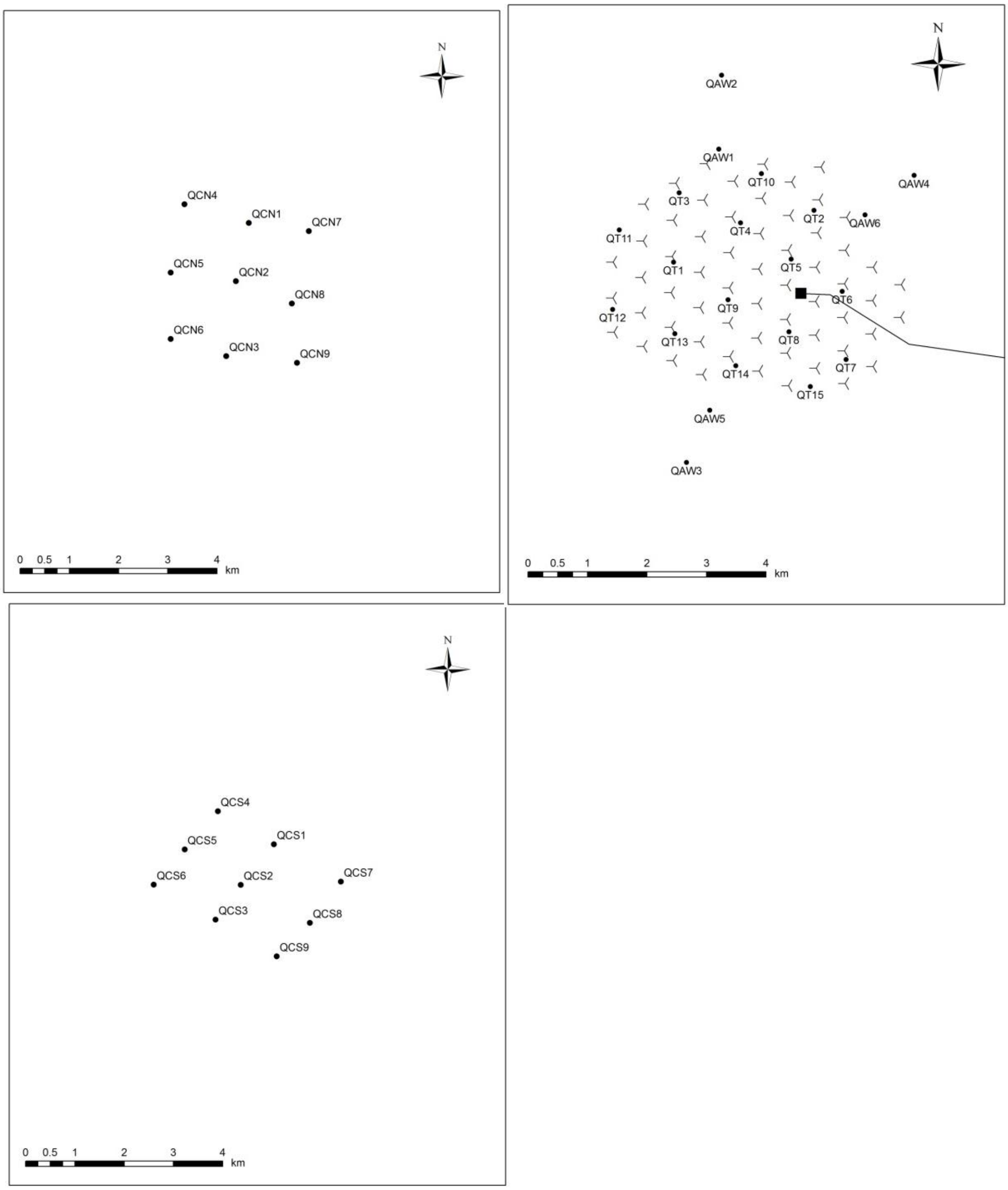

Figure 3: Sample positions of the dredges in the four areas.

2.3 Laboratory methods

2.3.1 Sediment analyses

Sediment particle size of the fraction less than 2000 µm was determined with laser granulometry (Malvern Mastersize 2000 laser granulometer).

To assess the organic matter content, the PrepAsh was used: an instrument for gravimetrical analysis, which increases precision while decreasing the time of analysis.

This is mainly accomplished by the completely automised run of 29 samples and one reference sample. The weight change of the sample is plotted while the temperature gradually increases according a predefined program.

2.3.2 Boxcore samples

In accordance with the research plan, only the non-replicate boxcore samples were sorted in the lab. The replicate samples were collected for possible further reference and would only be analysed if the data from the non-replicated sites suggested there might be patterns at a small spatial scale that were relevant for the research questions.

Sorting

After fixation with a 4% formo-saline solution, the benthos samples were stained with Rose Bengal (1%), which has the ability to stain proteins in animals that were caught alive. After 24h, the organisms were picked out.

The samples were thoroughly rinsed in a 1 mm sieve to remove as much fixation liquid as possible. The rinsed sediment was stored in a triage bin, where the organisms were picked out. Under a binocular microscope, the organisms were sorted to higher taxa levels. From this point, the organisms were preserved in 70% ethanol. The residue was kept for possible future audits.

Identification

All present organisms were identified to species level whenever possible and counted. Identification was performed with a binocular microscope and based on the most recent systematic literature. For nomenclature and taxonomy, the World Register of Marine Species (WoRMS) was followed. All identified organisms were stored per species in separated tubes/jars.

Biomass

In this study, we opted to determine biomass (ash free dry weight) in an indirect way. Depending on the taxonomic class, a different method was used. This is according to the methods used for the T0 data (Jarvis *et al.*, 2004) and the T1 data of OWEZ (Daan *et al.*, 2007).

Molluscs, echinoids and *Ophiura* spp.

Lengths and widths (if possible) were measured of molluscs and echinoids, respectively. The central disk was measured of *Ophiura* spp. All measurements were done with a digital caliper with an accuracy of 0.01 mm. Mollusc lengths were converted to ashfree dry weight (AFDW) using an equation of the form: $W = a.L^b$; where W is AFDW, L is length and a and b are species specific constants supplied by NIOZ.

Polychaetes, larger crustaceans, gastropods and *Asterias rubens*

Biomass data of these organisms were determined with the Blotted wet weight method. Organisms were weighted per sample and per species. Individuals were dried on filter paper until no surface moisture was present. The organisms were gently placed in an aluminium cup (small organisms) or a porcelain cup (larger organisms) and weighted to 0.0001 gram accurate. Wet weight was transformed to ashfree dry weight (AFDW) by using applicable conversion factors for the different taxa (Ricciardi & Bourget, 1998).

2.3.3 Dredge samples

Sorting, identification and biomass

All 39 dredge samples were sorted, identified and weighted (wet weight) in a field laboratory. Some species (polychaetes and bivalves) were re-identified in the laboratory if there was some uncertainty about the identification. In addition, five complete samples were re-sorted and re-identified in the laboratory for quality control purposes.

Shell damage

To assess whether bivalves suffered from shell damage, all species of bivalves that were regularly encountered were examined for scars under a dissecting microscope. In addition, shell lengths were measured to assess length-frequency distributions.

2.4 Statistical analyses

Density and biomass (Ash Free Dry Weight, AFDW) for the boxcore samples were standardised to the number of individuals per m² (ind/m²) and for the dredge samples to the number of individuals per 100 m². In addition, diversity indices were calculated per sample (Shannon-Wiener, Pielou's Evenness and Gini-Simpson index). The Shannon index is based on the relative abundances of the species in a community and increases with increasing diversity. Pielou's evenness ranges from 0 to 1 and raises with decreasing variation in communities. The Gini-Simpson index equals the probability that two individuals represent different taxa, which raises with increasing diversity. Differences between the four different areas were assessed with Kruskal-Wallis ANOVA followed by post-hoc multiple comparisons using Statistica (StatSoft, 2004).

Multivariate analyses were carried out with the Primer v6 program (Clarke & Gorley, 2006). Before analysis, data were fourth-root transformed. Bray-Curtis similarity matrices were used to build up non-metric multidimensional scaling (MDS) plots. MDS plots give information on relationships between data points. SIMPER analysis allows to detect which species contribute to the distance between certain communities (dissimilarity percentage) and clustering in a community (similarity percentage). ANOSIM analyses (Analysis of Similarities) were performed to determine significant differences ($p < 0.05$) between groups (areas).

2.5 Quality control

During the analyses of benthic samples - sorting and identification - quality controls were carried out. 10% of the boxcore samples and 12% of the dredge samples were re-analysed by a colleague analyst.

All controls were within the 90% similarity level set as a minimum acceptance criterion by NMBAQCS (Worsfold & Hall, 2010).

3. Results

3.1 Physical variables

Sampling depth of the boxcore samples ranged from 16.6 m (QT29) to 23.1 m (QCS14), with a mean of 21.0 ± 1.5 m for all samples (Table 1). Despite the small range, sampling depth was significantly shallower in the northern reference area than in the southern reference area and the turbine site (Figure 4).

Table 1: Sampling depth of the boxcore samples.

Area	Sampling depth (m)			
	Mean	St. Dev.	Max.	Min.
QCN	20,2	0,18	20,7	20,0
QT	21,1	1,87	22,5	16,6
QAW	20,8	1,03	22,2	20,0
QCS	21,7	1,19	23,1	19,1
Total	21,0	1,50	23,1	16,6

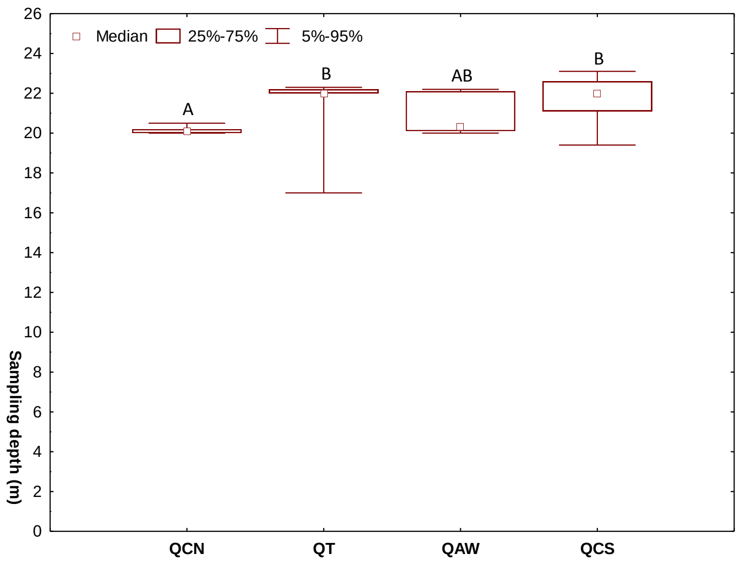

Figure 4: Box-whisker plots of the sampling depth for boxcore samples per area. Statistically significant differences (post-hoc multiple comparisons; $p < 0.05$) are indicated with different letters.

Median grain size ranged from 210 μm (QCS 6) to 364 μm (QCN 16), with a mean particle size of 280 ± 28 μm for all samples (Table 2); this can be classified as medium sand according to the Wentworth-scale. There was a slight north-south trend of coarsening sands, with a significantly higher median grain size in the southern reference area than in the northern reference area and the turbine site (Figure 5).

Table 2: Physical variables of the boxcore samples.

Area	Median particle size (µm)		Clay (%)		Sand (%)		Organic matter (%)	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
QCN	263	31,4	1,40	2,22	98,6	2,22	0,57	0,16
QT	277	16,8	0,31	1,36	99,7	1,36	0,50	0,06
QAW	279	5,93	0,00	0,00	100	0,00	0,59	0,19
QCS	303	29,9	0,16	0,46	99,8	0,46	0,49	0,14

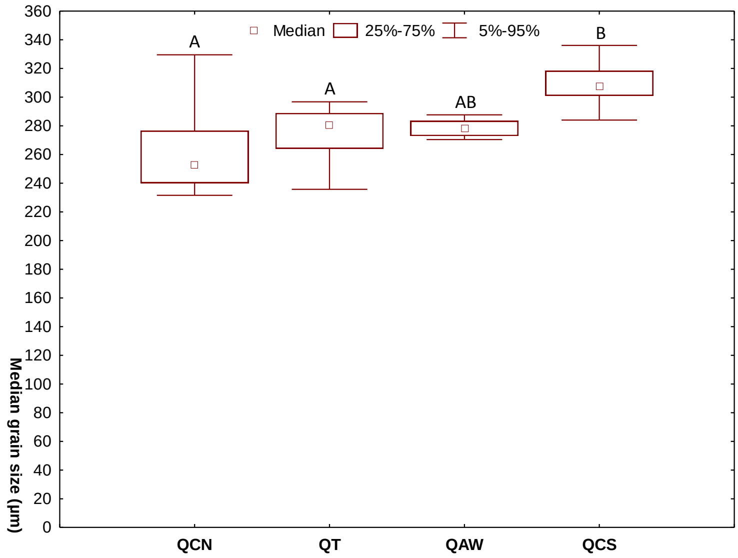

Figure 5: Box-whisker plats of the median grain size per areia. Statistically significant differences (post-hoc multiple comparisons; *p* < 0.05) are indicated with different letters.

Clay percentages (particle size less than 63 µm) were very low, the mean ranged between 0% (QAW) and 1.4% (QCN). Sandy sediments dominated the three areas, with mean percentages varying between 98.6 and 100.0%. No significant differences in clay and sand percentages were observed between the areas.

Organic matter content was comparable between the different areas, with an overall mean of 0.521 ± 0.125%. The lowest value was measured for QCN 19 with a value of 0.277%, the highest value (1.00%) was measured in QCN 25. Despite the limited range, organic matter content was significantly lower in the southern reference area than in the northern reference area (Figure 6).

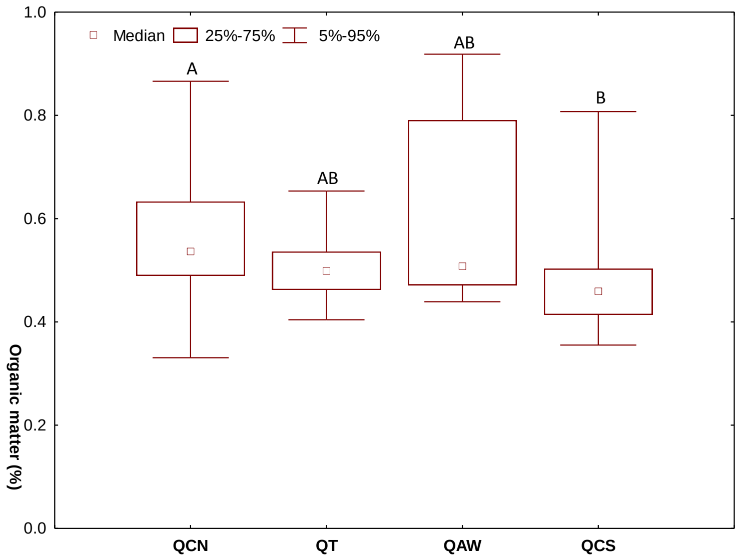

Figure 6: Box-whisker plot of the organic matter content per area. Statistically significant differences (post-hoc multiple comparisons; $p < 0.05$) are indicated with different letters.

3.2 Boxcore samples

General diversity – species composition

A total number of 58 different invertebrate taxa was found in the windfarm area and the two reference areas. The number of species per sample varied between 3 (QCS 8) and 19 (QT 10) with an average of 10 ± 3 species per sample (Table 3). Species richness was significantly higher in the northern than in the southern reference area (Figure 7). Most of the taxa found were polychaete worms (21 taxa) and crustaceans (20 taxa); the latter contained amongst others 11 amphipod species and 5 decapod species (Figure 8).

Table 3: Biodiversity data of the boxcore samples per area.

Area	Samples	Number of species			Pielou's Evenness	Shannon Index	Gini-Simpson Index
		Total	Mean	St. Dev.			
QCN	25	40	12	3	0,866	2,09	0,834
QT	47	51	9	3	0,879	1,94	0,816
QAW	6	24	10	2	0,849	1,94	0,800
QCS	25	36	8	3	0,864	1,70	0,751
Total	103	58	10	3	0,870	1,92	0,804

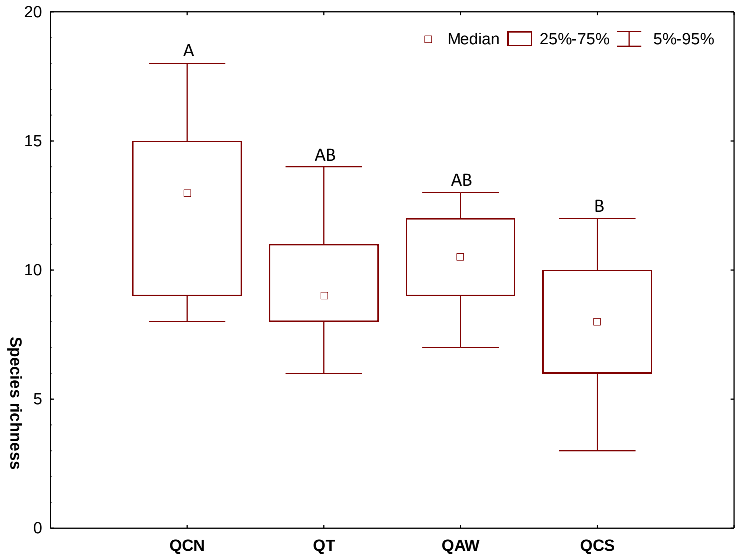

Figure 7: Box-whisker plot of species richness per area. Statistically significant differences (post-hoc multiple comparisons; $p < 0.05$) are indicated with different letters.

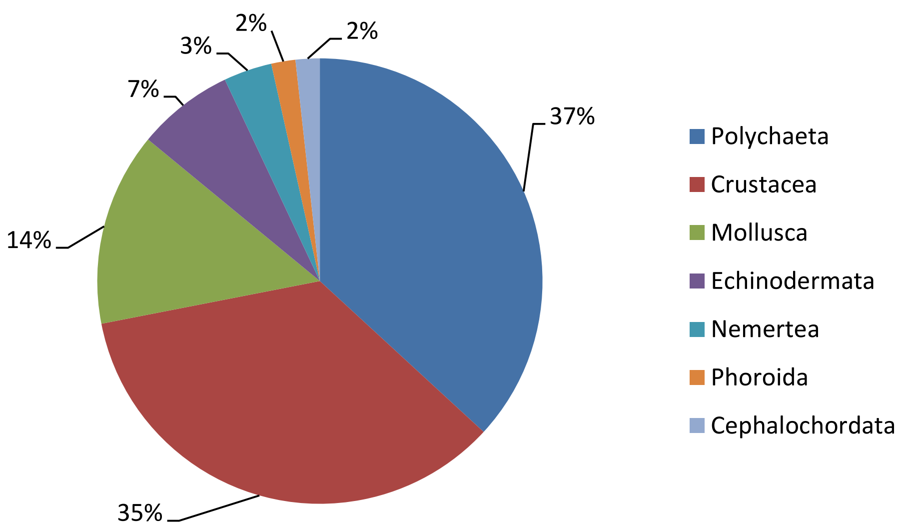

Figure 8: Proportion of species richness of the taxa present in the boxcore samples. Percentages represent the relative contribution of the different taxa the species richness.

Pielou's evenness was similar for the different areas (Figure 9). The Pielou's Evenness values of 0,84 and higher indicate a fairly even community in all areas. Shannon Index (Figure 10) and Gini-Simpson Index (Figure 11) were both significantly higher in the northern reference area than in the southern reference area.

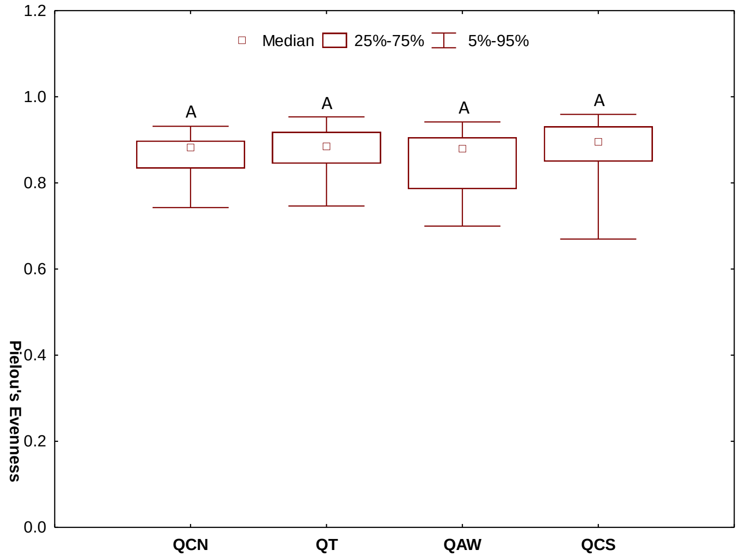

Figure 9: Box-whisker plot of Pielou's Evenness per area. Statistically significant differences (post-hoc multiple comparisons; $p < 0.05$) are indicated with different letters.

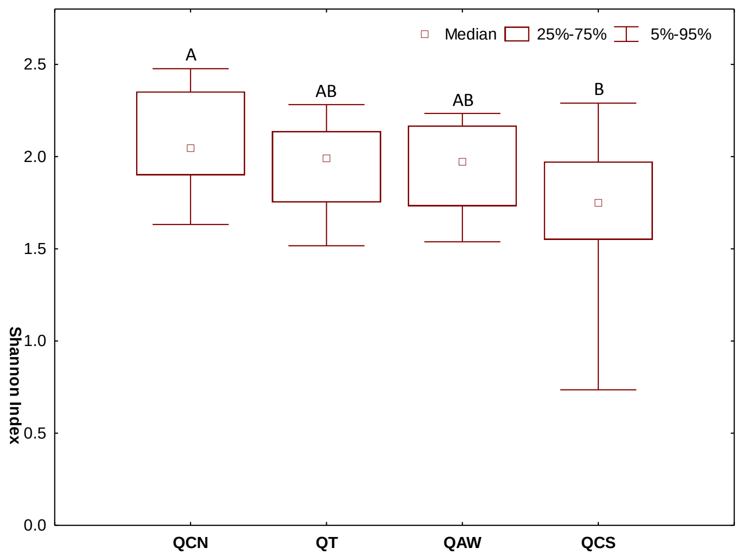

Figure 10: Box-whisker plot of Shannon Index per area. Statistically significant differences (post-hoc multiple comparisons; $p < 0.05$) are indicated with different letters.

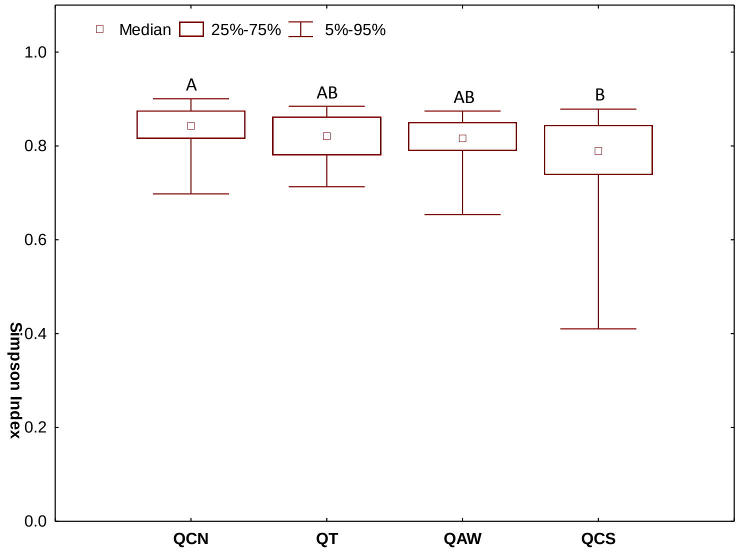

Figure 11: Box-whisker plot of Gini-Simpson Index per area. Statistically significant differences (post-hoc multiple comparisons; $p < 0.05$) are indicated with different letters.

A 'species accumulation curve' was used to examine if the amount of analysed samples was sufficient to get a representative idea of the biodiversity present (Figure 12). The maximum number of species was estimated using an extrapolation technique (Bootstrapping). The graph shows that at 104 samples, the estimated number of species is close to an asymptotic value. This means that the sampling effort was sufficient. Looking at estimated versus observed number of species over all areas together, 95% of the estimated number of species was encountered in the samples. In the northern and southern reference site it was 90%, in the turbine site 86%.

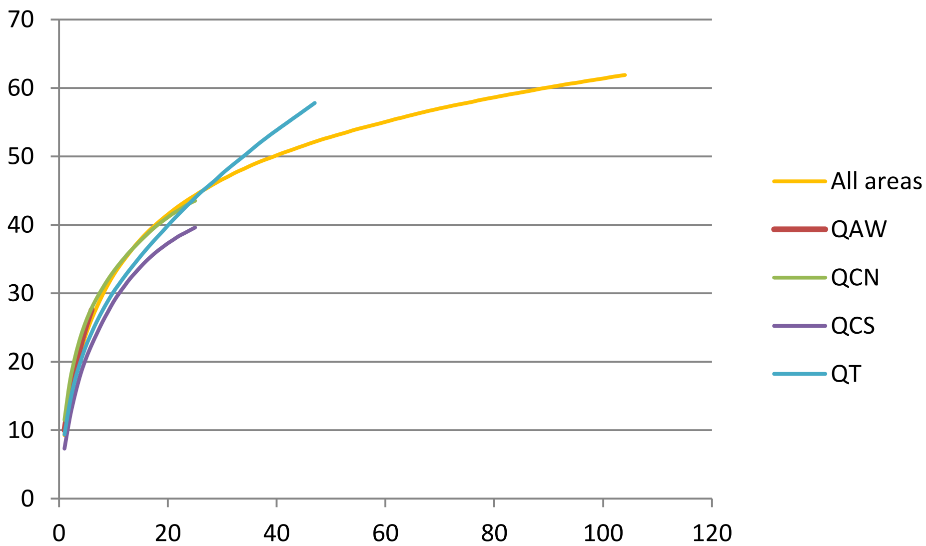

Figure 12: Estimated number of species in relation to the number of samples, determined with Bootstrapping.

Density and biomass

Mean invertebrate densities ranged from 186 ± 80 individuals/m² in QCS to 459 ± 258 individuals/m² in QCN (Table 4). The maximum density was observed in QCN 12 with 1154 individuals/m², which was mainly due to a high density of the tube building polychaete *Lanice conchilega* (423 individuals/m²). A high density in QT 20 was due to *Scoloplos armiger* (295 individuals/m²). Density was significantly lower in the southern reference area than in the other areas and density was also significantly lower in the turbine site than in the northern reference area (Figure 13).

Table 4: Density and biomass data of the boxcore samples.

Area	Density (N/m²)				Biomass (g AFDW/m²)			
	Mean	St. Dev.	Max.	Min.	Mean	St. Dev.	Max.	Min.
QCN	459	258	1154	205	16,1	14,3	49,7	0,214
QT	280	132	756	128	7,43	7,98	39,5	0,101
QAW	346	152	577	218	9,50	8,11	18,7	0,626
QCS	186	80	385	77	9,92	12,0	53,9	0,225
Total	305	189	1154	77	10,3	11,2	53,9	0,102

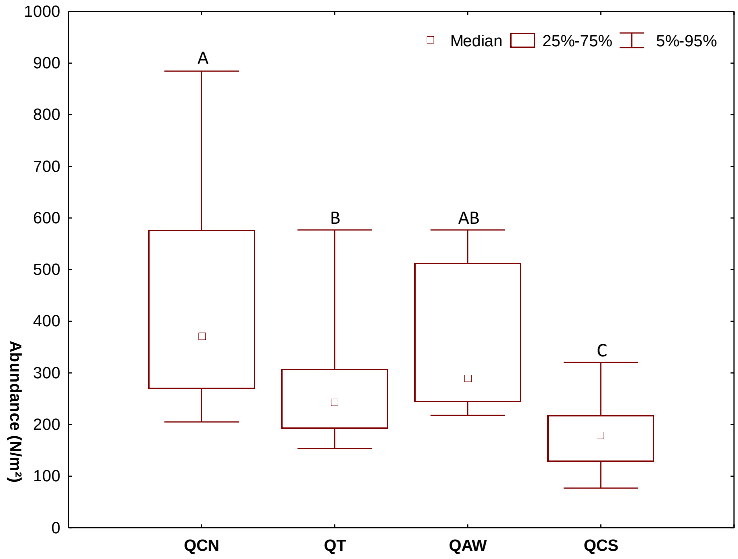

Figure 13: Box-whisker plot of abundance per area. Statistically significant differences (post-hoc multiple comparisons; $p < 0.05$) are indicated with different letters.

The mean biomass (AFDW) was highest in the northern reference site (16.1 ± 14.3 g/m²) and lowest in the turbine site (7.43 ± 7.98 g/m²). High biomasses were mostly due to the presence of *Echinocardium cordatum* and adult *Ensis directus*. There were no statistically significant differences in biomasses between the areas (Figure 14).

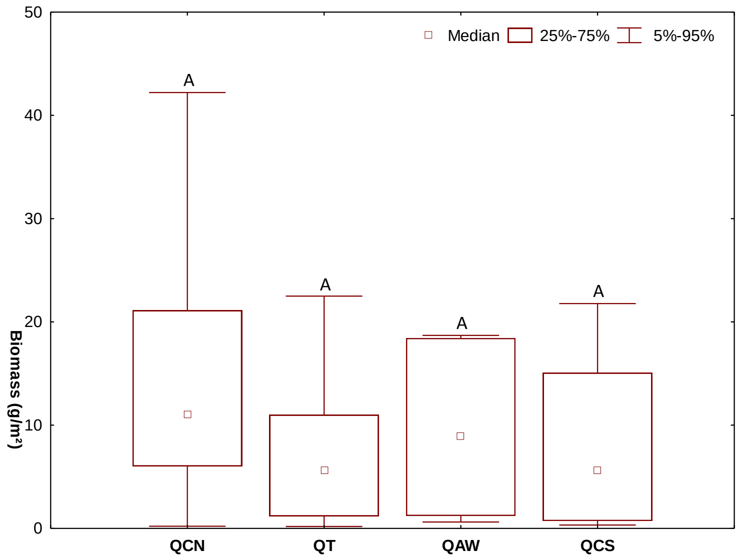

Figure 14: Box-whisker plot of biomass per area. Statistically significant differences (post-hoc multiple comparisons; *p* < 0.05) are indicated with different letters.

Multivariate analyses

The multivariate ANOSIM data-analysis showed statistical differences in density and biomass between the different areas ($p < 0.001$). However, no difference was found between the QT area and any of the other areas. Looking at the MDS-plot, it is clear that the samples are arranged along a north – south gradient (Figure 15). Dissimilarity between areas was derived from the ANOSIM and SIMPER results. The dissimilarity between the different areas was caused by differences in densities of the following species: *Bathyporeia elegans*, *Chaetozone setosa* and *Echinocardium cordatum*. When these analyses were performed on the biomass data, similar dissimilarity percentages were obtained, although there was a shift in characteristic species. The biomass indicator species were *Echinocardium cordatum*, *Ensis directus* and *Lanice conchilega* (Table 5).

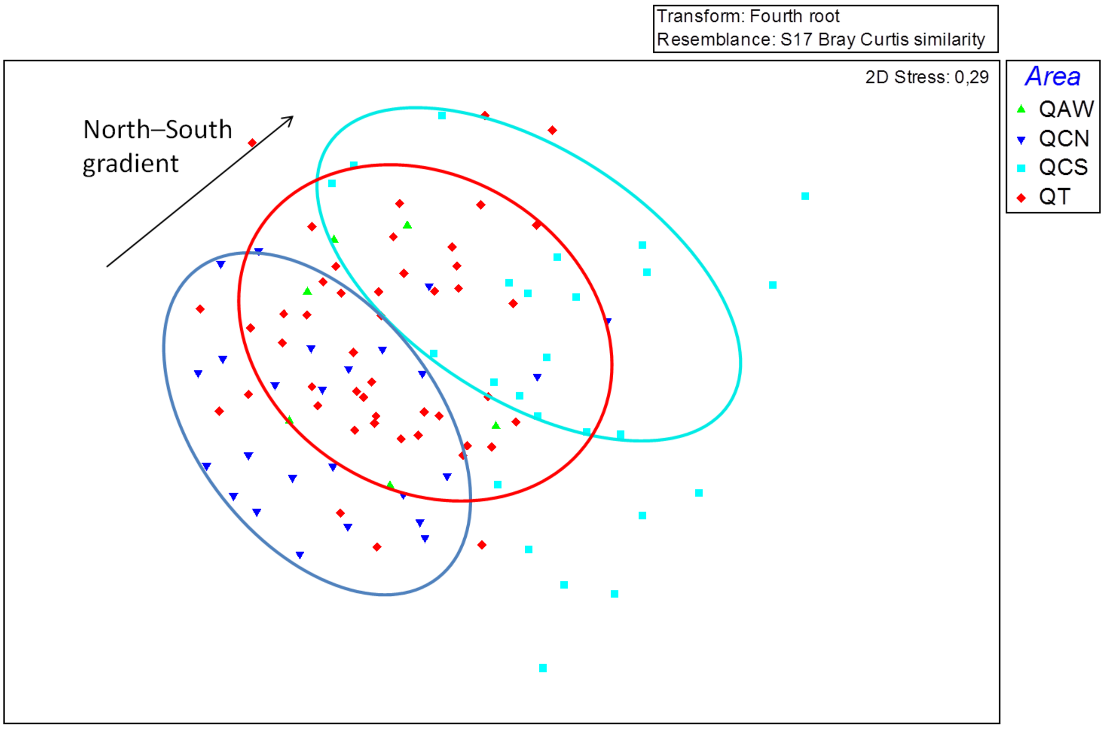

Figure 15: MDS plot based on density data with indication of the different areas (note the stress factor of 0.29, which suggest a relatively low relevance of the sample clusters). Dark blue circle: QCS; Red circle: QT and QAW; Light blue circle: QCN.

The most abundant taxa were *Scoloplos armiger, Nephtys cirrosa* and *Bathyporeia elegans*. These species led to a similarity of ± 40% in each area[2]. A total of 31 species (53%) occurred in all areas, which indicates that the seabed on a broad scale in this area is comparable. The taxa listed in Table 6 were specific to one or two areas (North-South gradient from left to right) and occurred in more than one sample.

[2] In multivariate analyses, the areas QT and QAW were treated as one area, because of the low sample size of QAW.

Table 5: Results ANOSIM and SIMPER analyses of the boxcore samples.

Area	*R*	*p*	Dissimilarity (%)	Indicator species	Mean density Area 1	Mean density Area 2
QCN - QCS	0,355	0,001	65,2	*Bathyporeia elegans*	2,29	0,96
				Chaetozone setosa	1,67	0,23
				Bathyporeia guilliamsoniana	1,98	0,77
				Echinocardium cordatum	1,48	1,16
				Scoloplos armiger	2,29	1,61
				Ophelia borealis	0,56	1,31
QCN - QT	0,239	0,001	57,0	*Bathyporeia guilliamsoniana*	1,98	0,85
				Chaetozone setosa	1,67	0,90
				Urothoe brevicornis	0,85	1,13
				Echinocardium cordatum	1,48	0,97
				Magelona johnstoni	1,14	0,59
				Eteone longa	0,66	1,16
				Bathyporeia elegans	2,29	2,17
QCS - QT	0,417	0,001	64,0	*Bathyporeia elegans*	0,96	2,17
				Scoloplos armiger	1,61	2,77
				Ophelia borealis	1,31	0,42
				Echinocardium cordatum	1,16	0,97
				Eteone longa	0,23	1,16
				Urothoe brevicornis	0,15	1,13

Table 6: Taxa specific to one or two areas, which appear in more than one sample.

<table>
<tr><th>QCN</th><th>QT and QAW</th><th>QCS</th></tr>
<tr><td>Nepthys caeca</td><td></td><td></td></tr>
<tr><td colspan="2">Chamelea striatula</td><td></td></tr>
<tr><td colspan="2">Donax vittatus</td><td></td></tr>
<tr><td colspan="2">Eunereis longissima</td><td></td></tr>
<tr><td colspan="2">Lanice conchilega</td><td></td></tr>
<tr><td colspan="2">Malmgreniella darbouxi</td><td></td></tr>
<tr><td colspan="2">Nephtys hombergii</td><td></td></tr>
<tr><td colspan="2">Phyllodoce mucosa</td><td></td></tr>
<tr><td colspan="2">Processa modica</td><td></td></tr>
<tr><td></td><td>Asterias rubens</td><td></td></tr>
<tr><td></td><td>Nototropis falcatus</td><td></td></tr>
<tr><td></td><td>Pinnotheres pisum</td><td></td></tr>
<tr><td></td><td colspan="2">Leucothoe incisa</td></tr>
<tr><td></td><td colspan="2">Spiophanes bombyx</td></tr>
<tr><td></td><td colspan="2">Spisula subtruncata</td></tr>
<tr><td></td><td colspan="2">Thia scutellata</td></tr>
<tr><td></td><td></td><td>Aricidea spp.</td></tr>
<tr><td></td><td></td><td>Liocarcinus holsatus</td></tr>
</table>

3.3 Dredge samples

General diversity – species composition

During the benthic dredge surveys, a total of 60 different species were identified, with an average of 19 ± 3 species per sample (Table 7). Species richness was similar in the different areas (Figure 16). Eleven taxa were decapods, 11 bivalves, four echinoderms and 14 fish. Also 15 polychaete species were identified, however, this benthic dredge is not optimal to sample polychaetes, because only bigger specimens are retained in the net.

Table 7: Biodiversity data of the dredge samples per area.

Area	Samples	Number of species			Pielou's Evenness	Shannon Index	Gini-Simpson Index
		Total	Mean	St. Dev.			
QCN	9	41	19	3	0,731	2,16	0,823
QT	15	48	19	3	0,694	2,03	0,781
QAW	6	35	19	3	0,712	2,08	0,830
QCS	9	39	18	2	0,745	2,14	0,822
Total	39	60	19	3	0,717	2,09	0,808

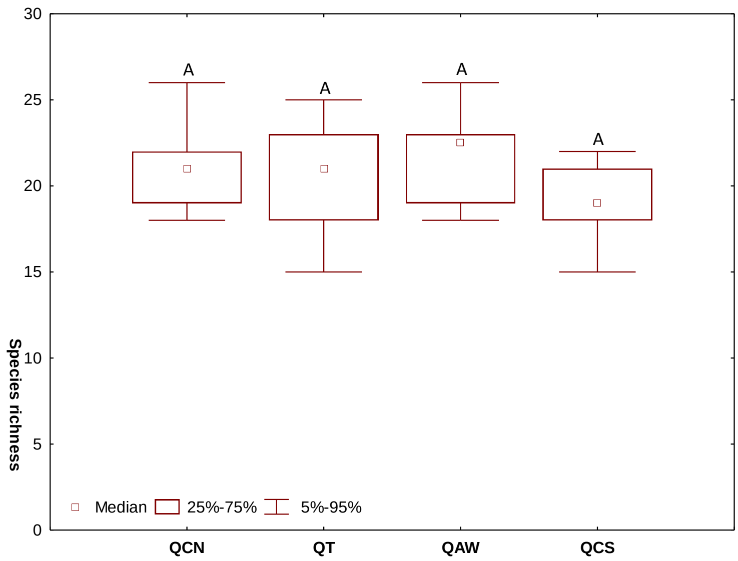

Figure 16: Box-whisker plot of species richness per area. Statistically significant differences (post-hoc multiple comparisons; $p < 0.05$) are indicated with different letters.

There is little variation in diversity between the different sampling areas. There were no statistically significant differences in Pielou's Evenness (Figure 17), Shannon Index (Figure 18) and Gini-Simpson Index (Figure 19) between the areas.

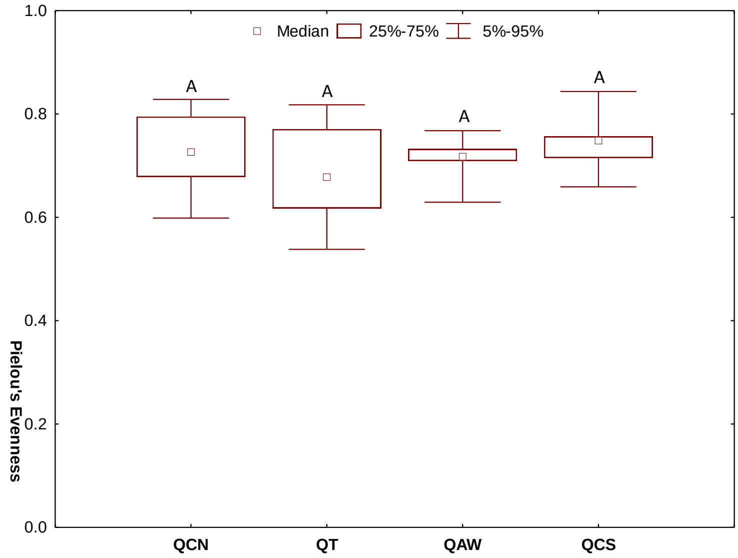

Figure 17: Box-whisker plot of Pielou's Evenness per area. Statistically significant differences (post-hoc multiple comparisons; $p < 0.05$) are indicated with different letters.

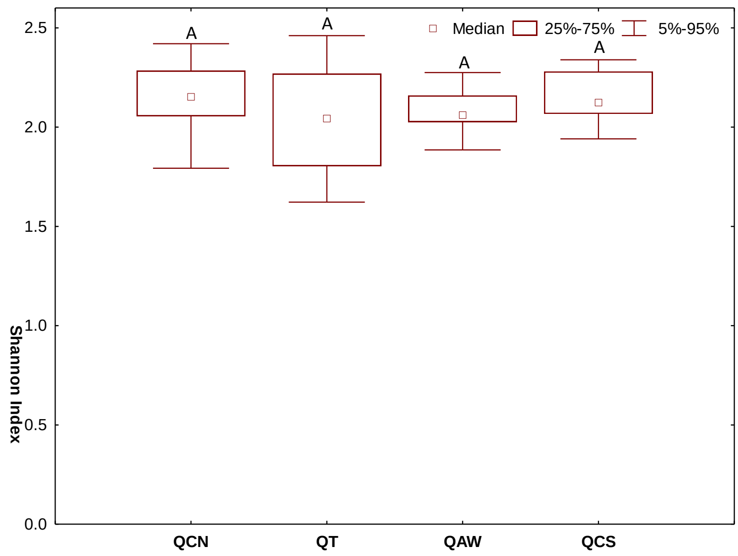

Figure 18: Box-whisker plot of Shannon Index per area. Statistically significant differences (post-hoc multiple comparisons; $p < 0.05$) are indicated with different letters.

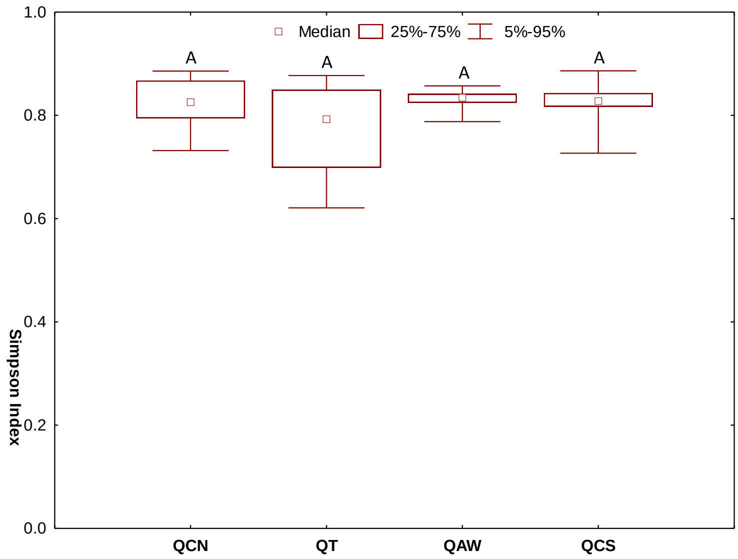

Figure 19: Box-whisker plot of Gini-Simpson Index per area. Statistically significant differences (post-hoc multiple comparisons; $p < 0.05$) are indicated with different letters.

The species accumulation curve shows that an asymptotic value is almost reached with an effort of 39 samples (Figure 20). At that point, 88% of the estimated number of species was encountered in the samples.

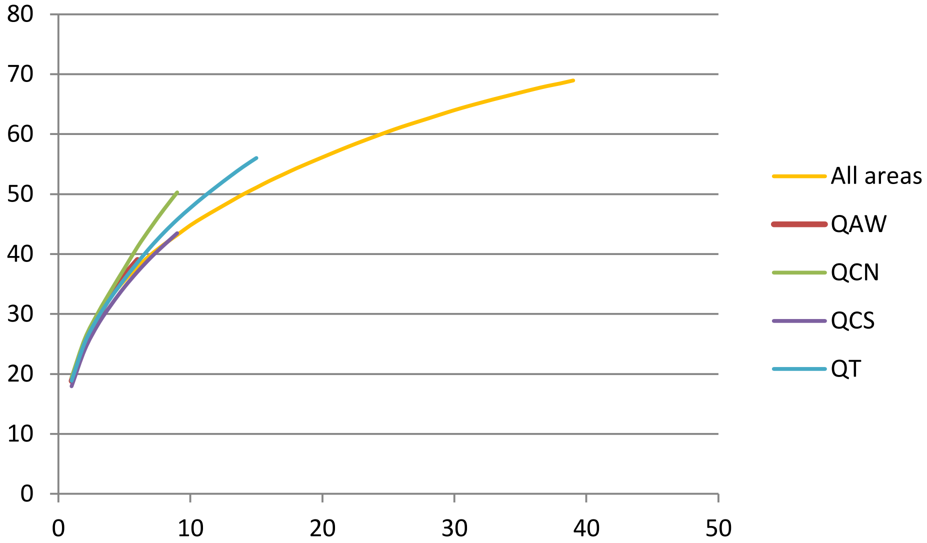

Figure 20: Dredge samples, estimated number of species in relation to the number of samples, determined with Bootstrapping.

Density and biomass

The mean dredge densities ranged from 140 ± 47 individuals/100 m² in QCS to 213 ± 36 individuals/100 m² in QAW. The highest density was observed in QT8 with 332 individuals/100 m², which was due to a high density of *Echinocardium cordatum* (171 individuals/100 m²). There were no statistically significant differences in density between the areas (Figure 21). The most abundant species was *Echinocardium cordatum*, followed by *Ophiura ophiura*, *Spisula* spp. and *Ophiura albida*.

Table 8: Density and biomass data of the dredge sampling.

Area	Density ($N/100m^2$)				Biomass (g AFDW/$100m^2$)			
	Mean	St. Dev.	Max.	Min.	Mean	St. Dev.	Max.	Min.
QCN	158	58	247	82	80	34	128	31
QT	178	74	332	102	106	57	219	36
QAW	213	36	278	176	74	30	127	38
QCS	140	47	235	87	85	64	238	33
Total	170	63	332	82	91	52	238	31

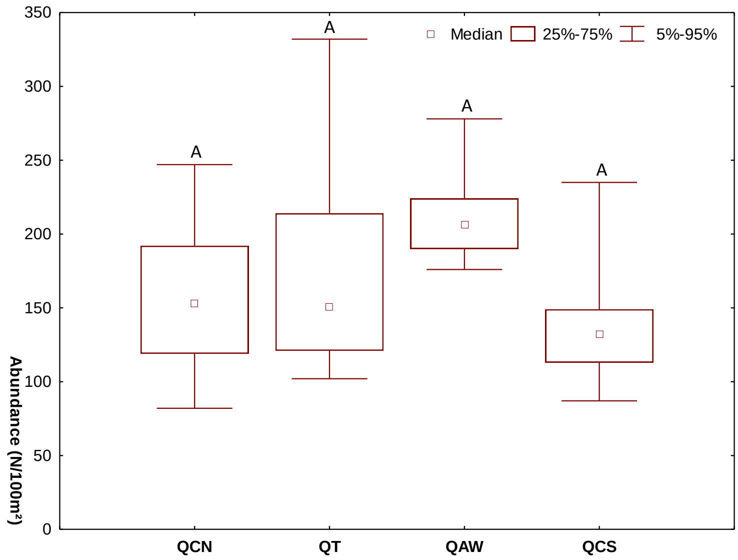

Figure 21: Box-whisker plot of abundance per area. Statistically significant differences (post-hoc multiple comparisons; $p < 0.05$) are indicated with different letters.

The mean dredge biomass ranged from 74 ± 30 g AFDW/100 m² in QAW to 106 ± 57 g AFDW/100 m² in QT (Table 8). The highest biomass was observed in QSC6 with 238 g AFDW/100 m², which was due to a high density of *Echinocardium cordatum* (194 g AFDW/100 m²). There were no statistically significant differences in biomass between the areas (Figure 22). In all areas, *Echinocardium cordatum* was the dominant species in terms of biomass. The length-frequency distribution of *Echinocardium cordatum* in the different areas was similar (Figure 23), although slightly more large specimens of around 4 cm were captured in QT and QAW.

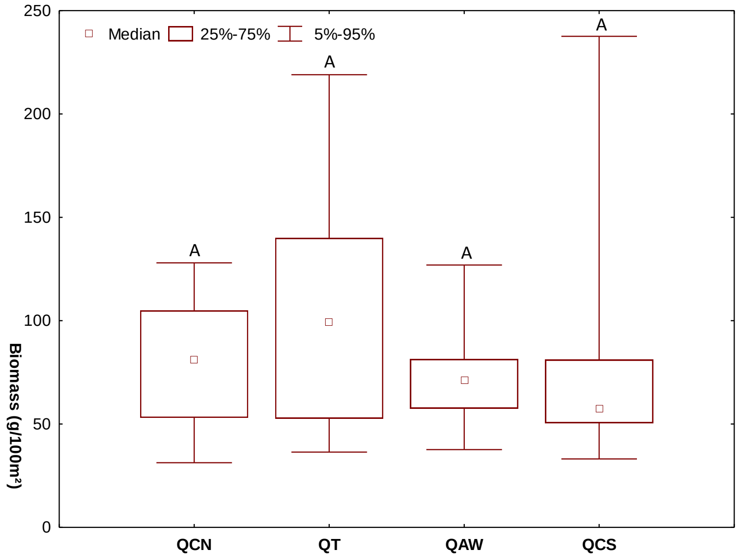

Figure 22: Box-whisker plot of biomass per area. Statistically significant differences (post-hoc multiple comparisons; $p < 0.05$) are indicated with different letters.

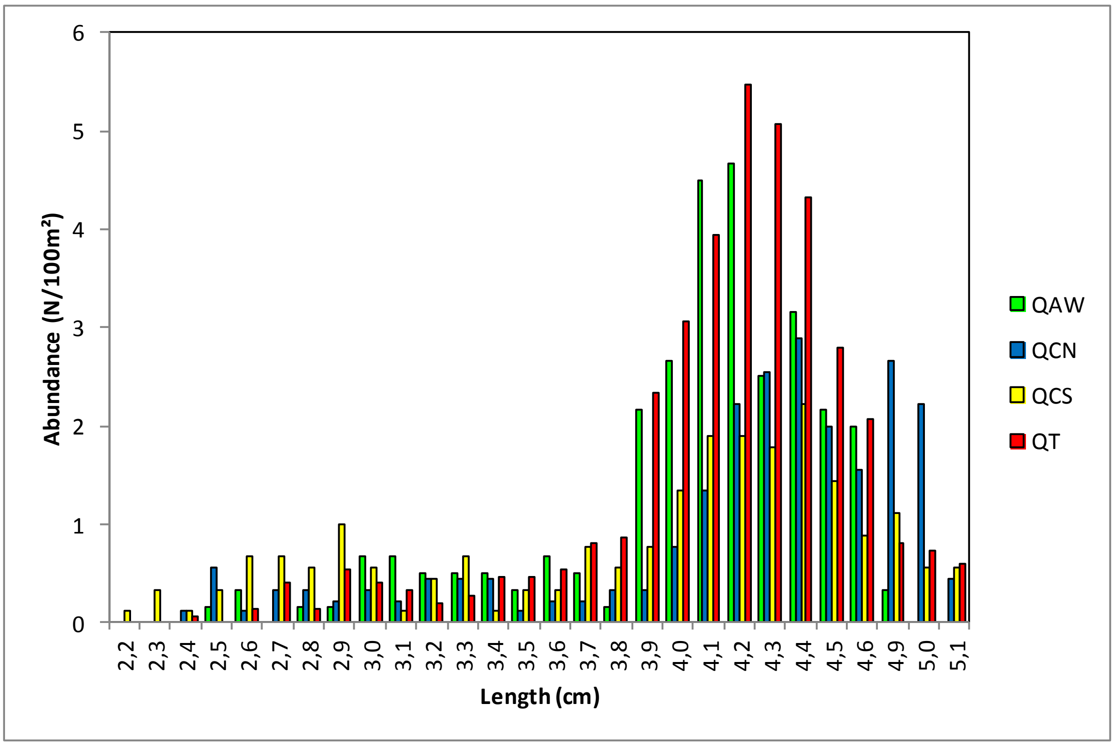

Figure 23: Length-frequency distribution of *Echinocardium cordatum* per area (outliers excluded).

Multivariate analyses

The ANOSIM analysis showed, as with the boxcore analysis, differences in densities between the different areas (Table 9). As with the boxcore samples, the MDS-plot also revealed a gradient from north to south (Figure 24). Dissimilarity between areas were mainly caused by differences in densities of *Donax vittatus*, *Ophelia borealis*, *Pomatoschistus* spp. and *Chamelea* spp.

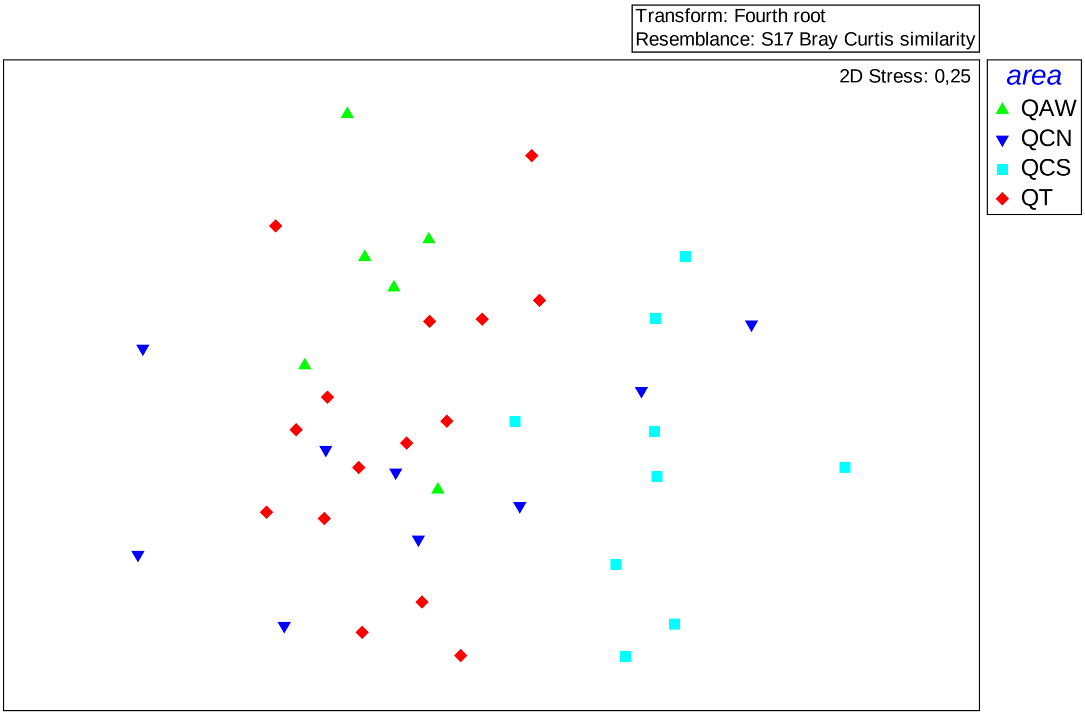

Figure 24: MDS plot based on density data in the dredge samples with indication of the different areas (note the stress factor of 0.25, which suggest a relatively low relevance of the sample clusters).

Table 9: Results ANOSIM and SIMPER analyses of the dredge samples.

Area	*R*	*p*	Dissimilarity (%)	Indicator species	Mean density Area 1	Area 2
QCN - QCS	0,499	0,001	41,7	*Donax vittatus*	2,14	0,42
				Ophelia borealis	1,06	1,96
				Pomatoschistus spp.	1,3	0,47
				Asterias rubens	1,06	0,22
				Chamelea spp.	1,17	0,35
QCN - QT	0,207	0,012	37,2	*Donax vittatus*	2,14	1,32
				Ophelia borealis	1,06	0,88
				Pomatoschistus spp.	1,30	0,78
				Echinocardium cordatum	2,12	2,67
				Euspira pulchella	1,04	0,91
QCS – QT	0,541	0,001	40,8	*Ophelia borealis*	1,96	0,88
				Donax vittatus	0,42	1,32
				Asterias rubens	0,22	1,14
				Chamelea spp.	0,35	1,21
				Nephtys cirrosa	0,89	0,30

Within the areas, there was a similarity of ± 40%, due to the presence of *Echinocardium cordatum*, *Ophiura* spp., *Donax vittatus* and *Spisula* spp. Species listed in Table 10 were specific to one or two areas and occurred in more than one sample. Three species (*Nemertea* spp. C, *Nepthys caeca*, *Arnoglossus laterna*) occurred only in the reference areas (north and south), but not in the turbine site.

Table 10: Dredge sample taxa specific to one or two areas and appearing in more than one sample.

<table>
<tr><th>QCN</th><th>QT and QAW</th><th>QCS</th></tr>
<tr><td>Sigalion mathildae</td><td></td><td></td></tr>
<tr><td colspan="2">Nemertea spp.</td><td></td></tr>
<tr><td></td><td>Crangon almanni</td><td></td></tr>
<tr><td></td><td>Echiichthys vipera</td><td></td></tr>
<tr><td></td><td>Solea solea</td><td></td></tr>
<tr><td></td><td colspan="2">Nereidae spp.</td></tr>
<tr><td></td><td colspan="2">Callionymus reticulatus</td></tr>
<tr><td></td><td colspan="2">Corystes cassivelaunus</td></tr>
</table>

Shell damage

Only four species of Bivalvia were regularly encountered: *Angulus fabula*, *Chamelea* spp., *Donax vittatus* and *Spisula* spp. *Ensis* spp. was also abundant, however, most shells were severly damaged during sampling and therefore, possible shell repair could not be evaluated for this genus. The number of damaged shells was very low overall (Table 11). *Angulus fabula*, the most fragile species, most frequently showed shell repair. For *Angulus fabula*, shell repair was only observed in the northern reference area, however, this species hardly occurred in the other areas. *Spisula* spp. also showed shell repair on a few occasions. Only *Spisula elliptica* showed shell repair, while the more robust *Spisula solida* never showed shell repair. Also *Donax vittatus* and Chamelea spp. never showed shell repair.

Table 11: Number of damaged shells showing shell repair and total number of encountered individuals for the frequently encountered Bivalvia per area.

	QCN		QT		QAW		QCS	
	Repair	Total	Repair	Total	Repair	Total	Repair	Total
Angulus fabula	6	172				3		1
Chamelea spp.		30		46		27		4
Donax vittatus		272		73		56		8
Spisula spp.	2	102	1	264		176	1	193

The length-frequency distribution of *Chamelea* spp. was similar in QT and QCN, while the species was hardly found in QCS and only small individuals were present in QAW (Figure 25). A higher abundance of *Donax vittatus* was observed in QCN, while the species was almost absent in QCS, however, the length was similar in the different areas (Figure 26). The length-frequency of *Spisula* spp. was similar in the different areas (Figure 27).

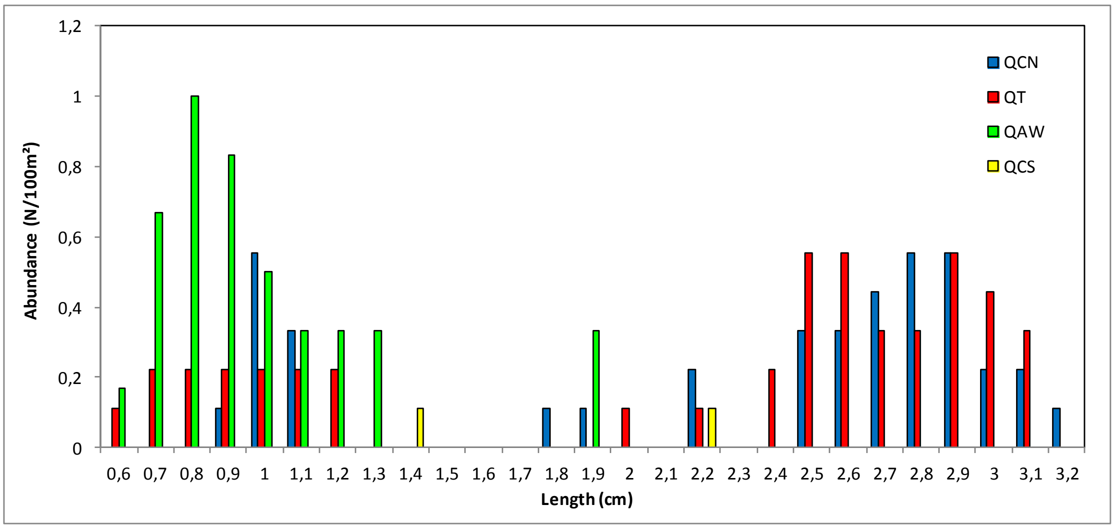

Figure 25: Length-frequency distribution of *Chamelea* spp. in the different areas.

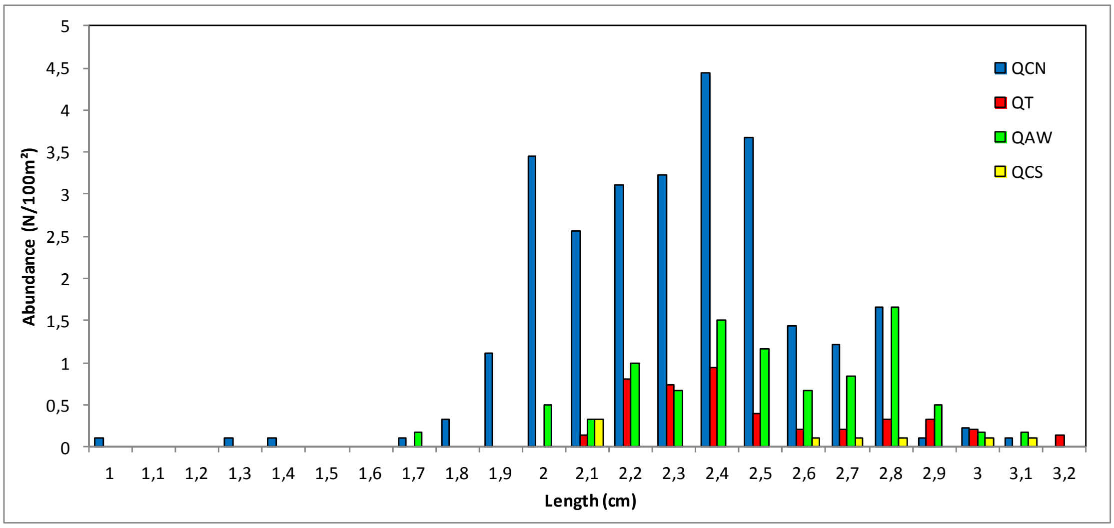

Figure 26: Length-frequency distribution of *Donax vittatus* in the different areas.

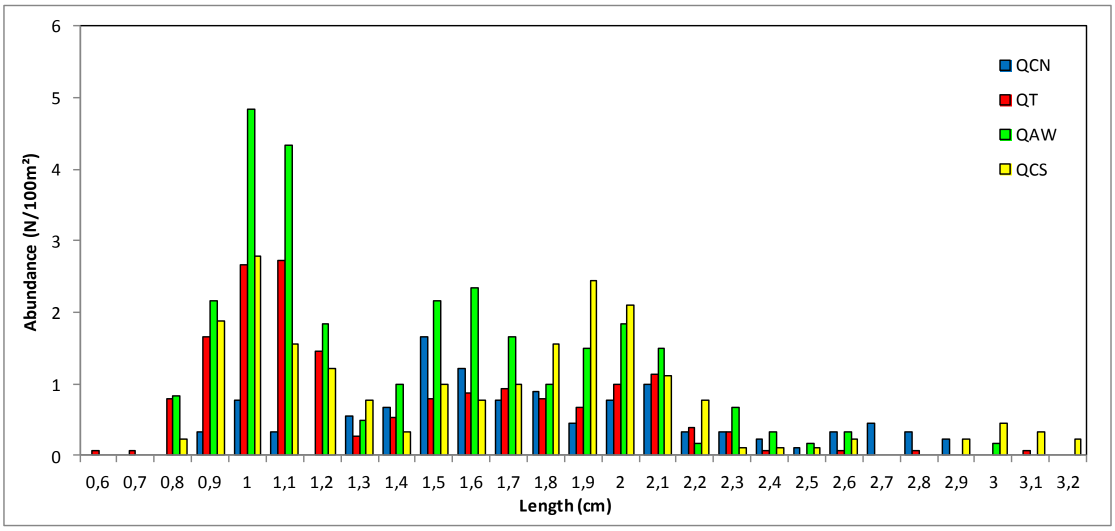

Figure 27: Length-frequency distribution of *Spisula* spp. in the different areas.

4. DISCUSSION

4.1 Development benthic invertebrate fauna Princess Amalia wind farm

In the present study, all sediments could be classified as medium sands and there was a small south to north transition from coarse to finer sediment. The finer sediment also contained slightly more organic matter.

The southern reference area, characterised by coarser sediment, contained the lowest total number of species and the lowest density in the boxcore samples. The sediments in the turbine site (QT) were intermediate in grain size. The mean invertebrate density and species richness in the boxcores were also intermediate. In the northern reference area, the sediment was the finest and also the highest density and species richness were found in the boxcore samples. The high densities were on account of *Urothoe poseidonis*, *Scoloplos armiger* and *Lanice conchilega*. *Asterias rubens*, *Nototropis falcatus* and *Pinnotheres pisum* were only found in the turbine area.

In the dredge samples, no significant differences were observed in density, biomass and species richness. *Echinocardium cordatum* dominated in terms of density as well as biomass. *Crangon almanni*, *Echiichthys vipera* and *Solea solea* were only found in the turbine area, although only a few individuals were encountered. As the dredge samples the larger, K-strategic species, it can be concluded that these species could not yet profit from the shelter from fishing activities five years after the installation of the wind farm. The vessel movement data confirm that no fishing activities are taking place in the wind farm (Koldenhof and de Jong, 2013). It thus seems that for the long-living species, five years is probably too short to show the recovery that was expected.

The species identified in the present study were typical for a sandy subtidal area. Such areas are often dominated by polychaete worms such as *Nephtys* spp., *Scoloplos armiger*, *Magelona* spp., *Chaetozone setosa*, *Ophelia borealis* and *Lanice conchilega*; amphipod genera such as *Urothoe* and *Bathyporeia* and the echinoid *Echinocardium cordatum* (Heip & Craeymeersch, 1995), which is in accordance with the present study.

Some of the typical sandy sediment species are classified as K-strategy species. K-strategy species are characterised by a slower growth rate, are longer-lived, grow bigger and generally start later with reproduction than r-strategy species. For example *Nephtys caeca* and other big polychaetes may get seven years old, *Chamelia striatula* 12 years and *Echinocardium cordatum* 10 or maybe 20 years (Van Moorsel, 2005). The latter species were found in comparable densities and length classes in the turbine area and in the reference areas. This means that no effect of the presence of the wind farm on K-strategy species of the area could yet be demonstrated.

4.2 Shell damage as indicator for reduced fishery pressure

Witbaard & Klein (1994) found that the incidence of sand grains incorporated into repairs in the shell matrix of bivalves increased coincidentally with the expansion of the Dutch Beam trawling fleet in the southern North Sea. Not only bivalves are damaged by beam trawling, also starfish could be damaged (Kaiser, 1996). Examination of shell scars of long-lived species provides a historical picture of fishing disturbance, whereas damaged starfish or specimens with regenerating arms are a useful short term (1 – 2 year) indicator (Witbaard & Klein, 1994; Kaiser, 1996). Since the closure of wind farms for fisheries is expected to increase opportunities for long-living bivalve species, this method was – qualitatively – used in the present study.

During the present study, only a few shells of the species *Angulus fabula* and *Spisula elliptica* were encountered that possessed scars. The number of scarred shells was therefore not sufficient for statistical analyses. The length-frequency distribution of the shells did not indicate that larger specimens were present in the turbine site compared to the reference sites.

4.3 Comparison with other wind farms in the Southern North Sea

The results of the Princess Amalia Wind Farm were compared with results from the baseline study T0 (Jarvis *et al*., 2004), the T1 results of the OWEZ wind farm (Daan *et al*., 2007), the Horns Rev wind farm (Bech *et al*., 2005) and the wind farms on the Bligh Bank and the Thornton Bank (Coates & Vincx, 2010; Coates *et al*., 2011, 2012). A direct comparison between the data collected during this T1 study and the T0 study is possible, because the same sample areas and stations were monitored. Also in T1 of OWEZ, the same sampling technique was used, while in the Horns Rev wind farm, the samples were collected by SCUBA divers.

<u>PAWP T1 versus baseline study PAWP T0</u>

The mean median particle size was significantly lower in present study than in the baseline T0 study: respectively 280.46 ± 28.07 and 582 ± 58.98. The sediment in the baseline was classified as coarse sands, while in present study, it was median sands. The difference in sediment grain size is so substantial, that we have to argue that the results of the baseline study are not reliable, especially since the area is known to have median sands (Tempelman *et al*., 2009). The mean percentage sand was comparable between both studies: around 99%. In the present study, we observed a small south to north transition from coarser to finer sediment; in the baseline, the same trend was observed. This gradual south to north transition along the Dutch coast was described earlier by Creutzberg *et al.* (1984). The organic matter content was slightly higher in T1 than in T0.

In the baseline boxcore samples, 109 benthic invertebrate taxa were identified, while in the present study only 58 taxa were found. There were almost twice as many polychaete and crustacean species found in T0. However, the number of treated samples was 200 in T0 versus 102 in T1. The mean species richness per sample was only slightly lower in T1 than in T0. A possible explanation for the observed difference in biodiversity could be due to the sampling season: samples were taken in May during T0 and in March during T1.

Densities in the boxcore samples were higher in T0, which was due to high densities of i.e. *Spiophanes bombyx*. During T1, this species was encountered on only three occasions. Notwithstanding the higher densities in T0, the biomasses were similar in both studies if large crabs (*Liocarcinus* spp.), razor clams (*Ensis* spp.) and sea urchins (*Echinocardium cordatum*) were not taken into account.

If polychaetes, Nemertea and fishes were not taken into account, 27 taxa were encountered in dredge samples in T1 versus 32 taxa in T0. In contrast to the boxcore samples, the mean species richness was slightly higher in dredge samples in T1 than in T0.

Densities from dredge samples in QCN were higher in T0 then in T1, due to high densities of *Donax vittatus* in T0. However, densities in the other areas were higher in T1 than in T0, which was mainly caused by higher densities of *Echinocardium cordatum* in T1.

<u>OWEZ T1</u>

Possible short-term effects of the construction of Offshore Windfarm Egmond aan Zee (OWEZ) on the composition of the local benthic fauna living in or on top of the sediment was evaluated a few months after the installation of the wind farm. During this study, benthic fauna was sampled with a boxcorer and a dredge within the wind farm and in six reference areas north and south of the wind farm. A high similarity between the fauna within the wind farm and the majority of the reference areas was observed. Density and diversity within the wind farm were well within the range of values observed in the reference areas. There was no indication that OWEZ differed in some way from the reference areas and there did not seem to be short-term effects of the construction of the wind farm on the local benthic fauna composition. These results are in accordance with the results obtained during the present study.

<u>Horns Rev</u>

The wind farm Horns Rev is situated 14-20 km off Blåvands Huk, which is the most western point of Denmark. One and two years after the wind farm became operational, benthic fauna was monitored. The sediment consisted of medium sand without organic matter. The benthic community at Horns Rev did not show signs of stress response as a consequence of possible impact from construction and operating activities. The density of the most abundant bivalves and bristle worms increased in the wind farm area, whereas the reference areas remained unchanged. This indicated that the potential decrease in predation pressure from birds contributed to increasing differences between densities for their favoured prey. Bird observations showed predominant foraging activity outside the wind farm area. Sampling depth in Horns Rev was maximum 10.4 m, which is much less than the sampling depth during the present study, where the influence of birds is expected to be much less important.

Although the difference in sampling strategy - in Horns Rev the samples were taken by SCUBA divers at distances of 5, 25 and 100 m from the turbine, while in PAWP, the samples were taken with boxcores at a minimum distance of 150 m from the turbine – almost half of the soft substrate species found in Horns Rev were also encountered in this study. Only a few species from Horns Rev were related to hard substrate, such as *Eulalia viridis*, *Jassa marmorata, Balanus* spp. and *Mytilus edulis*. The most abundant species in Horns Rev, *Goodallia triangularis* and *Pisione remota*, were not found in the present study. High abundances as recorded for those species (in some years averages higher than 600 ind./m²) were not recorded in PAWP T1.

Bligh Bank and Thornton Bank

Results from the wind farms on the Bligh Bank and the Thornton Banks in Belgium show that with standard methods, no differences in sediment and benthos between turbine areas and reference sites could yet be found in the first years after construction (Coates & Vincx, 2010). These results are in lign with the present study. However, a lower median grain size and higher macrobenthic densities were observed in 2010 one and seven meter from the scour protection system (boulders) of one turbine on the Thornton Bank (Coates *et al.*, 2011). These changes in the close vicinity of the turbines were explained by the decreased current speeds due to changing hydrodynamics or the relatively stable sand pits created during dredging activities. In 2011, an accumulation of juvenile starfish, together with the polychaetes *Spio* spp. and *Spiophanes bombyx* was obvious at stations less than 50 m from the scour protection of one turbine on the Thornton Bank (Coates *et al.*, 2012). Lower currents speeds and changing granulometric characteristics appeared to create a substantial change in the macrobenthic community six years after construction, especially on the Southwest gradient. This means that changes in soft sediment benthos could start from the immediate vicinity of the turbines and possibly spread from there. This research has evident implications for future sampling designs, where it might be advisable to include distance to the turbine foundations as a parameter for positioning sampling locations.

4.4 Remarkable findings

Some species found in the samples were previously unknown to the northern Dutch coast or rarely recorded in the area.

The hydromedusa (small jellyfish) *Eucheilota maculata* is common in coastal waters. Hydromedusae originate from a sedentary polyp stage (Figure 28). Polyps of this particular medusa have rarely been recorded. In dredge samples of PAWP, the polyp was found several times on the inside of empty cockle valves. The delicate polyps are easily abraded during routine sample processing and difficult to identify. If the inside of empty bivalve shells is a preferred habitat, this could be an important cause of the paucity of records for *E. maculata*.

The scale worm *Malmgreniella darbouxi* was found both in boxcore and dredge samples. The species had been recorded from the coast of The Netherlands only once before (Wijsman & Verduin, 2011).

Paramysis arenosa is a hyperbenthic mysid, only caught with the dredge. This mysid has long been considered a southern species, not occurring in the North Sea (Tattersall & Tattersall, 1951). Recently, it was found off the coast of Belgium and Zeeland (De Wicke *et al.*, 2003). Apart from a doubtful old record from Northumberland (Tattersall & Tattersall, 1951), our observation near IJmuiden constitutes the most northerly record in the North Sea.

The necklace shell *Lunatia catena* and its eggs were only found in the dredge samples. The eggs have rarely been recorded (Figure 28).

In the dredge samples, a number of cut-off bivalve siphon tips with conspicuous reddish markings were found (Figure 28). They agree well with the siphon tips of *Lutraria* sp. (ottershell). Probably they belong to *Lutraria lutraria*. This bivalve lives up to 40 cm deep into the sediment, which is probably the reason why only part of the siphons was collected. It was absent from the boxcore samples. Apparently, its density is too low to appear regularly in boxcores. *Lutraria lutraria* has colonised coastal waters of the southern North Sea during the last decades.

Figure 28: A) Polyp of *Eucheilota maculata*; B) siphon tip of *Lutraria* sp.; C) eggs of *Lunatia catena.*

Striarca lactea is a southern bivalve reaching its northern limit in the southern North Sea and living only locally along the Dutch coast near Zeeland, mainly below 20 m (De Bruyne *et al.*, in prep.). Eisma (1966) mentions only one additional northerly record from a dredge sample.

Two rare species of bryozoans were found in a dredge sample: *Aspidelectra melolontha* and *Membranipora tenuis*. There are no recent records off the Dutch coast north of Zeeland. Both colonies may have been collected dead.

5. CONCLUSIONS

Biodiversity and abundance of soft sediment benthos vary between different wind farms in the Southern North Sea, yet densities within a windfarm are in most cases not consequently higher/lower than in reference areas, which indicates no measurable effect of the wind farm on densities of common benthos species. This pattern was confirmed during the present study.

Density and diversity of the macrobenthic fauna in the boxcore samples of the turbine site were intermediate between the northern and the southern reference area, while no significant differences were observed in terms of biomass. No significant differences in the density, diversity and biomass of the dredge samples, which samples larger K-strategic species, were observed between the areas. These results indicate that five years after installation of the wind farm, K-strategic species could not yet profit from the shelter from fishing activities. Bivalves with scars were rarely observed during the present study and the possible influence of reduced trawling could thus not be evaluated. The length-frequency distribution of the common bivalve species did not indicate that larger shells were found in the turbine site and no effects of reduced fishing activities could therefore be detected.

The used sampling strategy allowed to assess the effect of the installation of wind park on the macroinvertebrate community. We see no reasons to change the research program for the following campaigns.

6. BIBLIOGRAPHY

Bech, M., Frederiksen, R., Pedersen, J. & Leonhard, S.B. (2005). Infauna monitoring Horns Rev Offshore Wind Farm. Annual Status Report 2004. Bio/consults A/S: 1-64.

Clarke, K.R. & Gorley, R.N. (2006). Primer v6: user manual/tutorial, Primer-e ltd, Plymouth.

Coates, D. & Vincx, M. (2010). Monitoring the effects of offshore wind farms on the soft-substratum macrobenthos: Year-1 Bligh Bank and Year-2 Thorntonbank. In: Degraer, S., Brabant, R. & Rumes, B., (Eds.), Offshore wind farms in the Belgian part of the North Sea: Early environmental impact assessment and spatio-temporal variability, pp. 83-103. Royal Belgian Institute of Natural Sciences, Management Unit of the North Sea Mathematical Models, Marine ecosystem management unit.

Coates, D., Vanaverbeke, J., Rabaut, M. & Vincx, M. (2011). Soft-sediment macrobenthos around offshore wind turbines in the Belgian Part of the North Sea reaveals a clear shift in species composition. In: Degraer, S., Brabant, R. & Rumes, B., (Eds.), Offshore wind farms in the Belgian part of the North Sea: Selected findings from the baseline and targeted monitoring, pp. 47-63. Royal Belgian Institute of Natural Sciences, Management Unit of the North Sea Mathematical Models, Marine ecosystem management unit.

Coates, D., Vanaverbeke, J. & Vincx, M. (2012). Enrichment of the soft sediment macrobenthos around a gravity based foundation on the Thorntonbank. In: Degraer, S., Brabant, R. & Rumes, B., (Eds.), Offshore wind farms in the Belgian part of the North Sea: Heading for an understanding of environmental impacts, pp. 41-54. Royal Belgian Institute of Natural Sciences, Management Unit of the North Sea Mathematical Models, Marine ecosystem management unit.

Daan, E., Mulder, M. & Bergman, M.J.N. (2007). Impact of windfarm OWEZ on the local macrobenthos community. Koninklijk Nedelands Instituut voor Zeeonderzoek (NIOZ), NL. Report OWEZ_R_261_T1_20091216: 1-77.

de Bruyne, R.H., van Leeuwen, S. & Gmelig Meyling, A.W. (in prep.). Ecologische atlas van de mariene schelpdieren van Nederland.

Dewicke, A., Cattrijsse, A., Mees, J. & Vincx, M. (2003). Spatial patterns of the hyperbenthos of subtidal sandbanks in the southern North Sea. Journal of Sea Research, 49: 27-45.

Eisma, D. (1966). The distribution of benthic marine mollusks off the main Dutch coast. Netherlands Journal of Sea Research, 3: 107-163.

Gray, J.S. & Elliot, M. (2009). Ecology of marine sediments. Oxford University Press.

Heip, C.H.R. & Craeymeersch, J.A. (1995). Benthic community structures in the North Sea. Helgoländer Meeresuntersuch, 49: 313-328.

Jarvis, S., Allen, J., Proctor, N., Crossfield, A., Dawes, O., Leighton, A., McNeill, L. & Musk, W. (2004). North Sea wind farms: Q7 Lot 1 Benthic fauna. Institute of Estuarine & Coastal Studies, Hull, UK. IECS rep. ZBB607.2-F-2004: 1-65.

Kaiser, M.J. (1996). Starfish damage as an indicator of trawling intensity. Marine Ecology Progress Series, 134: 303 – 307.

Koldenhof Y. and de Jong R. (2013). Scheepvaartbewegingen Prinses Amalia Windpark. Analyse voor 2009, 2010 en 2011. Marin report 25805.600.

Ricciardi, A. & Bourget E. (1998). Weight-to-weight conversion factors for marine benthic organisms. Marine Ecology Progress Series, 163: 245-251.

StatSoft Inc. (2004). STATISTICA (data analysis software system), version 7. www.statsoft.com, Statsoft, Tulsa.

Tattersall, W.M. & Tattersall, O.S. (1951). British Mysidacea. Ray Society, London, 460 pp.

Tempelman D., M. de Kluijver, J.T. van der Wal, G. van Moorsel, W. Lewis, A. Storm & Vanagt, T. (2009). The Macrobenthic Fauna in the Dutch Sector of the North Sea in 2007 and a comparison with previous data. Grontmij|AquaSense-rapport 202462-2, Commisioned by: Waterdienst, Amsterdam, 52 pp.

Van Moorsel, G.W.N.M. (2005). Macrofauna en hydromorfologie van zoute wateren. Ecosub, Doorn, 74 pp.

Wijsman, J. & Verduin, E. (2011). To monitoring Zandmotor Delflandse kust: benthos ondiepe kustzone en natte strand. IMARES/Grontmij, Rapportnr. C039/11.

Witbaard, R. & Klein, R. (1994). Long-term trends on the effects of southern North Sea beam trawl fishery on the bivalve mollusc *Arctica islandica* L. (Mollusca, Bivalvia). ICES Journal of Marine Science, 51: 99-105.

Worsfold, T. & Hall, D. (2010). National Marine Biological Analytical Quality Control Scheme: Guidelines for processing marine macrobenthic invertebrate samples: a processing requirements protocol, version 1.0, june 2010.

7. Annex List

Annex 1: Species list

Annex 2: Sampling coordinates

Annex 3: Raw data boxcore

Annex 4: Raw data dredge

Annex 5: Physical variables

Annex 1: Species list

[1]: Species identified in the boxcore samples; [2]: species identified in the dredge samples.

Phylum	Class	Species
Annelida	Polychaeta	*Aricidea minuta* [1]
		Chaetozone setosa [1]
		Eteone foliosa [1, 2]
		Eteone longa [1]
		Eunereis longissima [1, 2]
		Lanice conchilega [1, 2]
		Magelona filiformis [1]
		Magelona johnstoni [1]
		Magelona mirabilis [1]
		Malmgreniella darbouxi [1]
		Nephtys assimilis [2]
		Nephtys caeca [1, 2]
		Nephtys cirrosa [1, 2]
		Nephtys hombergii [1, 2]
		Nereidae spp. [2]
		Ophelia borealis [1, 2]
		Parexogone spp. [1]
		Phyllodoce groenlandica [2]
		Phyllodoce lineata [2]
		Phyllodoce mucosa [1]
		Poecilochaetus serpens [1]
		Scolelepis bonnieri [1, 2]
		Scoloplos armiger [1]
		Sigalion mathildae [2]
		Spio goniocephala [1]
		Spio spp. [2]
		Spiophanes bombyx [1]
Arthropoda	Malacostraca (Amphipoda)	*Abludomelita obtusata* [1]
		Bathyporeia elegans [1]
		Bathyporeia guilliamsoniana [1]
		Bathyporeia nana [1]
		Leucothoe incisa [1]
		Megaluropus agilis [1]
		Nototropis falcatus[1]
		Perioculodes longimanus [1]
		Pontocrates arcticus [1]
		Urothoe brevicornis [1]
		Urothoe poseidonis [1]
	Malacostraca (Cumacea)	*Diastylis cf. rugosa* [1]
		Monopseudocuma gilsoni [1]
		Pseudocuma longicorne [1]

Annex 1: species list

Phylum	Class	Species
	Malacostraca (Decapoda)	*Corystes cassivelaunus* [2]
		Crangon almanni [2]
		Crangon crangon [2]
		Liocarcinus holsatus [1, 2]
		Liocarcinus marmoreus [2]
		Macropodia rostrata [2]
		Pagurus bernhardus [2]
		Pestarella tyrrhena [1]
		Philocheras trispinosus[2]
		Pinnotheres pisum [1, 2]
		Processa modica [1]
		Processa spp. [2]
		Thia scutellata [1, 2]
	Malacostraca (Mysida)	*Gastrosaccus spinifer* [1, 2]
	Maxillopoda	*Sacculina carcini* [2]
Chordata	Actinopterygii	*Ammodytes spp.* [2]
		Arnoglossus laterna [2]
		Buglossidium luteum [2]
		Callionymus lyra [2]
		Callionymus reticulatus [2]
		Echiichthys vipera [2]
		Gymnammodytes semisquamatus [2]
		Hyperoplus lanceolatus [2]
		Limanda limanda [2]
		Pleuronectes platessa [2]
		Pomatoschistus spp. [2]
		Solea solea [2]
		Taurulus bubalis [2]
	Leptocardii	*Branchiostoma lanceolatum* [1]
Echinodermata	Asteroidea	*Asterias rubens* [1, 2]
	Echinoidea	*Echinocardium cordatum* [1, 2]
	Ophiuroidea	*Ophiura albida* [1, 2]
		Ophiura ophiura [1, 2]
Mollusca	Bivalvia	*Angulus fabula* [1 ,2]
		Angulus tenuis [2]
		Chamelea striatula [1, 2]
		Donax vittatus [1, 2]
		Ensis directus [1, 2]
		Ensis ensis [2]
		Lutraria spp. [2]
		Macoma balthica [1]
		Spisula spp. [1, 2]
		Spisula subtruncata [1]
		Striarca lactea [2]
		Tellimya ferruginosa [1, 2]
	Gastropoda	*Euspira pulchella* [1, 2]

Phylum	Class	Species
Nemertea	/	*Nemertea spp. A* [1, 2] *Nemertea spp. B* [1, 2] *Nemertea spp. C* [2]
Phoronida	/	*Phoronis spp.* [1]

Station:	Time	Date	Coordinate
QCN1	12u50	12/03/2012	N52 48.350 E4 21.190
QCN2	13u49	12/03/2012	N52 48.238 E4 21.893
QCN3.0	13u58	12/03/2012	N52 48.216 E4 22.553
QCN3.1	14u07	12/03/2012	N52 48.216 E4 22.553
QCN3.2	14u13	12/03/2012	N52 48.216 E4 22.553
QCN3.3	14u41	12/03/2012	N52 48.216 E4 22.553
QCN3.4	15u08	12/03/2012	N52 48.216 E4 22.553
QCN4	16u08	12/03/2012	N52 48.185 E4 23.228
QCN5	16u13	12/03/2012	N52 48.105 E4 23.878
QCN10	16u25	12/03/2012	N52 47.589 E4 23.835
QCN9	16u37	12/03/2012	N52 47.681 E4 23.178
QCN8	16u44	12/03/2012	N52 47.763 E4 22.500
QCN7	16u54	12/03/2012	N52 47.825 E4 21.795
QCN6	17u03	12/03/2012	N52 47.902 E4 21.086
QCN11.0	17u13	12/03/2012	N52 47.436 E4 21.031
QCN11.1	17u19	12/03/2012	N52 47.467 E4 21.030
QCN11.2	17u29	12/03/2012	N52 47.467 E4 21.030
QCN11.3	17u39	12/03/2012	N52 47.467 E4 21.030
QCN11.4	17u48	12/03/2012	N52 47.467 E4 21.030
QCN12	17u57	12/03/2012	N52 47.392 E4 21.776
QCN13.0	18u08	12/03/2012	N52 47.341 E4 22.426
QCN13.1	18u16	12/03/2012	N52 47.341 E4 22.426
QCN13.2	18u26	12/03/2012	N52 47.341 E4 22.426
QCN13.3	18u37	12/03/2012	N52 47.341 E4 22.426
QCN13.4	18u46	12/03/2012	N52 47.341 E4 22.426
QCN14	11u33	13/03/2012	N52 47.234 E4 23.096
QCN15.4	12u16	13/03/2012	N52 47.149 E4 23.826
QCN15.0	11u41	13/03/2012	N52 47.149 E4 23.826
QCN15.1	11u50	13/03/2012	N52 47.149 E4 23.826
QCN15.2	11u57	13/03/2012	N52 47.149 E4 23.826
QCN15.3	12u06	13/03/2012	N52 47.149 E4 23.826
QCN20	12u26	13/03/2012	N52 46.698 E4 23.738
QCN19	12u37	13/03/2012	N52 46.803 E4 23.089
QCN18	12u48	13/03/2012	N52 46.888 E4 22.397
QCN17	12u56	13/03/2012	N52 46.942 E4 21.724
QCN16	13u07	13/03/2012	N52 47.013 E4 21.020
QCN21	14u24	13/03/2012	N52 46.625 E4 21.012
QCN22	14u34	13/03/2012	N52 46.497 E4 21.734
QCN23.2	15u00	13/03/2012	N52 46.476 E4 22.407
QCN23.3	15u09	13/03/2012	N52 46.476 E4 22.407
QCN23.4	15u16	13/03/2012	N52 46.476 E4 22.407
QCN23.0	14u42	13/03/2012	N52 46.476 E4 22.407
QCN23.1	14u52	13/03/2012	N52 46.476 E4 22.407
QCN24	15u25	13/03/2012	N52 46.413 E4 23.087
QCN25	15u38	13/03/2012	N52 46.315 E4 23.735
QAW4.0	17u00	13/03/2012	N52 36.800 E4 12.985
QAW4.1	17u06	13/03/2012	N52 36.800 E4 12.985

Annex 2: Coordinates

QAW4.2	17u12	13/03/2012	N52 36.800 E4 12.985
QAW4.3	17u17	13/03/2012	N52 36.800 E4 12.985
QAW4.4	17u25	13/03/2012	N52 36.800 E4 12.985
QAW1.0	17u35	13/03/2012	N52 36.514 E4 13.031
QAW1.1	17u41	13/03/2012	N52 36.514 E4 13.031
QAW1.2	17u47	13/03/2012	N52 36.514 E4 13.031
QAW1.3	17u53	13/03/2012	N52 36.514 E4 13.031
QAW1.4	18u00	13/03/2012	N52 36.514 E4 13.031
QAW2.0	18u19	13/03/2012	N52 35.858 E4 15.258
QAW2.1	18u28	13/03/2012	N52 35.858 E4 15.258
QAW2.2	18u37	13/03/2012	N52 35.858 E4 15.258
QAW2.3	18u46	13/03/2012	N52 35.858 E4 15.258
QAW2.4	18u55	13/03/2012	N52 35.858 E4 15.258
QAW3.0	19u02	13/03/2012	N52 36.011 E4 15.818
QAW3.1	19u15	13/03/2012	N52 36.011 E4 15.818
QAW3.2	19u26	13/03/2012	N52 36.011 E4 15.818
QAW3.3	19u38	13/03/2012	N52 36.011 E4 15.818
QAW3.4	19u50	13/03/2012	N52 36.011 E4 15.818
QAW6.1	18u17	15/03/2012	N52 33.805 E4 12.689
QAW6.2	18u23	15/03/2012	N52 33.805 E4 12.689
QAW6.3	18u28	15/03/2012	N52 33.805 E4 12.689
QAW6.4	18u32	15/03/2012	N52 33.805 E4 12.689
QAW6.0	9u53	14/03/2012	N52 33.805 E4 12.689
QAW5.1	18u40	15/03/2012	N52 34.168 E4 12.823
QAW5.2	18u47	15/03/2012	N52 34.168 E4 12.823
QAW5.3	18u54	15/03/2012	N52 34.168 E4 12.823
QAW5.4	18u59	15/03/2012	N52 34.168 E4 12.823
QAW5.0	10u03	14/03/2012	N52 34.168 E4 12.823
QT42	10u25	14/03/2012	N52 35.431 E4 11.601
QT37	10u32	14/03/2012	N52 35.624 E4 12.089
QT38	10u37	14/03/2012	N52 35.811 E4 12.563
QT39	10u45	14/03/2012	N52 35.971 E4 13.014
QT40.1	9u05	16/03/2012	N52 36.173 E4 13.547
QT40.2	9u10	16/03/2012	N52 36.173 E4 13.547
QT40.3	9u15	16/03/2012	N52 36.173 E4 13.547
QT40.4	9u20	16/03/2012	N52 36.173 E4 13.547
QT40.0	10u50	14/03/2012	N52 36.173 E4 13.547
QT41	10u58	14/03/2012	N52 36.279 E4 13.870
QT45	11u11	14/03/2012	N52 36.170 E4 12.827
QT44.1	8u34	16/03/2012	N52 36.011 E4 12.328
QT44.2	8u46	16/03/2012	N52 36.011 E4 12.328
QT44.3	8u53	16/03/2012	N52 36.011 E4 12.328
QT44.4	8u59	16/03/2012	N52 36.011 E4 12.328
QT44.0	11u16	14/03/2012	N52 36.011 E4 12.328
QT43	11u25	14/03/2012	N52 35.808 E4 11.835
QT46	11u34	14/03/2012	N52 36.210 E4 12.022
QT36	12u08	14/03/2012	N52 36.050 E4 14.122
QT35	12u14	14/03/2012	N52 35.890 E4 13.681
QT34	12u23	14/03/2012	N52 35.720 E4 13.245
QT33.1	9u27	16/03/2012	N52 35.557 E4 12.787

QT33.2	9u34	16/03/2012	N52 35.557 E4 12.787
QT33.3	9u39	16/03/2012	N52 35.557 E4 12.787
QT33.4	9u45	16/03/2012	N52 35.557 E4 12.787
QT33.0	12u30	14/03/2012	N52 35.557 E4 12.787
QT32	12u37	14/03/2012	N52 35.375 E4 12.319
QT31	12u43	14/03/2012	N52 35.198 E4 11.855
QT48	12u54	14/03/2012	N52 35.028 E4 11.440
QT1	13u00	14/03/2012	N52 34.800 E4 11.719
QT2.1	9u57	16/03/2012	N52 35.006 E4 12.173
QT2.2	10u41	16/03/2012	N52 35.006 E4 12.173
QT2.3	10u47	16/03/2012	N52 35.006 E4 12.173
QT2.4	10u53	16/03/2012	N52 35.006 E4 12.173
QT2.0	13u07	14/03/2012	N52 35.006 E4 12.173
QT3	13u14	14/03/2012	N52 35.168 E4 12.622
QT4	13u20	14/03/2012	N52 35.325 E4 13.096
QT5	13u28	14/03/2012	N52 35.495 E4 13.546
QT6.1	12u30	16/03/2012	N52 35.680 E4 14.032
QT6.2	12u36	16/03/2012	N52 35.680 E4 14.032
QT6.3	12u43	16/03/2012	N52 35.680 E4 14.032
QT6.4	12u48	16/03/2012	N52 35.680 E4 14.032
QT6.0	13u36	14/03/2012	N52 35.680 E4 14.032
QT7	13u44	14/03/2012	N52 35.860 E4 14.481
QT13	14u58	14/03/2012	N52 35.673 E4 14.735
QT12	15u03	14/03/2012	N52 35.495 E4 14.271
QT11	15u10	14/03/2012	N52 35.325 E4 13.785
QT10.1	11u06	16/03/2012	N52 35.149 E4 13.324
QT10.2	11u12	16/03/2012	N52 35.149 E4 13.324
QT10.3	11u16	16/03/2012	N52 35.149 E4 13.324
QT10.4	11u24	16/03/2012	N52 35.149 E4 13.324
QT10.0	15u18	14/03/2012	N52 35.149 E4 13.324
QT9	15u24	14/03/2012	N52 34.955 E4 12.873
QT8	15u29	14/03/2012	N52 34.794 E4 12.407
QT47	15u34	14/03/2012	N52 34.635 E4 11.976
QT14	15u42	14/03/2012	N52 34.564 E4 12.705
QT15	15u50	14/03/2012	N52 34.743 E4 13.183
QT16	15u57	14/03/2012	N52 34.927 E4 13.660
QT18.1	12u06	16/03/2012	N52 35.292 E4 14.638
QT18.2	12u12	16/03/2012	N52 35.292 E4 14.638
QT18.3	12u17	16/03/2012	N52 35.292 E4 14.638
QT18.4	12u21	16/03/2012	N52 35.292 E4 14.638
QT18.0	16u05	14/03/2012	N52 35.292 E4 14.638
QT19	16u12	14/03/2012	N52 35.446 E4 15.103
QT24	16u18	14/03/2012	N52 35.213 E4 15.349
QT23	16u24	14/03/2012	N52 35.067 E4 14.913
QT22	16u31	14/03/2012	N52 34.891 E4 14.422
QT21.1	11u25	16/03/2012	N52 34.713 E4 13.957
QT21.2	11u40	16/03/2012	N52 34.713 E4 13.957
QT21.3	11u47	16/03/2012	N52 34.713 E4 13.957
QT21.4	11u54	16/03/2012	N52 34.713 E4 13.957
QT21.0	16u36	14/03/2012	N52 34.713 E4 13.957

Annex 2: Coordinates

QT20	16u42	14/03/2012	N52 34.545 E4 13.525
QT25	16u50	14/03/2012	N52 34.537 E4 14.218
QT30	17u26	14/03/2012	N52 34.526 E4 14.979
QT29	17u34	14/03/2012	N52 34.353 E4 14.519
QT26	17u42	14/03/2012	N52 34.719 E4 14.671
QT27	17u48	14/03/2012	N52 34.909 E4 15.180
QT28	17u53	14/03/2012	N52 35.055 E4 15.630
QCS5	9u59	15/03/2012	N52 26.817 E4 02.260
QCS10	10u06	15/03/2012	N52 26.577 E4 01.854
QCS15.0	10u13	15/03/2012	N52 26.334 E4 01.382
QCS15.1	10u20	15/03/2012	N52 26.334 E4 01.382
QCS15.2	10u27	15/03/2012	N52 26.334 E4 01.382
QCS15.3	10u32	15/03/2012	N52 26.334 E4 01.382
QCS15.4	10u39	15/03/2012	N52 26.334 E4 01.382
QCS20	10u45	15/03/2012	N52 26.092 E4 00.837
QCS25	10u56	15/03/2012	N52 25.765 E4 00.376
QCS24	11u04	15/03/2012	N52 25.983 E3 59.724
QCS19	11u10	15/03/2012	N52 26.292 E4 00.239
QCS14	11u16	15/03/2012	N52 26.535 E4 00.800
QCS9	11u23	15/03/2012	N52 26.767 E4 01.213
QCS4	11u30	15/03/2012	N52 27.022 E4 01.687
QCS3.0	11u40	15/03/2012	N52 27.168 E4 01.098
QCS3.1	11u48	15/03/2012	N52 27.168 E4 01.098
QCS3.2	11u53	15/03/2012	N52 27.168 E4 01.098
QCS3.3	12u00	15/03/2012	N52 27.168 E4 01.098
QCS3.4	12u05	15/03/2012	N52 27.168 E4 01.098
QCS8	12u30	15/03/2012	N52 26.930 E4 00.654
QCS13.0	12u36	15/03/2012	N52 26.685 E4 00.198
QCS13.1	12u43	15/03/2012	N52 26.685 E4 00.198
QCS13.2	12u48	15/03/2012	N52 26.685 E4 00.198
QCS13.3	12u53	15/03/2012	N52 26.685 E4 00.198
QCS13.4	12u59	15/03/2012	N52 26.685 E4 00.198
QCS18	13u07	15/03/2012	N52 26.456 E3 59.619
QCS23.0	13u14	15/03/2012	N52 26.171 E3 59.131
QCS23.1	13u19	15/03/2012	N52 26.171 E3 59.131
QCS23.2	13u25	15/03/2012	N52 26.171 E3 59.131
QCS23.3	13u31	15/03/2012	N52 26.171 E3 59.131
QCS23.4	13u39	15/03/2012	N52 26.171 E3 59.131
QCS22	13u39	15/03/2012	
QCS17	14u45	15/03/2012	N52 26.352 E3 58.478
QCS12	14u58	15/03/2012	N52 26.625 E3 59.014
QCS7	15u07	15/03/2012	N52 26.877 E3 59.570
QCS2	15u14	15/03/2012	N52 27.101 E4 00.002
QCS1	15u21	15/03/2012	N52 27.365 E4 00.560
QCS6	15u30	15/03/2012	N52 27.549 E3 59.955
QCS11.0	15u37	15/03/2012	N52 27.282 E3 59.366
QCS11.1	15u47	15/03/2012	N52 27.067 E3 58.959
QCS11.2	15u53	15/03/2012	N52 27.067 E3 58.959
QCS11.2	16u00	13/03/2012	N52 27.067 E3 58.959
QCS11.3	16u06	13/03/2012	N52 27.067 E3 58.959

QCS11.4	16u12	13/03/2012	N52 27.067 E3 58.959
QCS16	16u18	13/03/2012	N52 26.825 E3 58.438
QCS21	16u26	13/03/2012	N52 26.545 E3 57.849

Annex 3a: Box core density data (ind/m²)

Area	QCN							
Sample	QCN 1	QCN 2	QCN 3.0	QCN 4	QCN 5	QCN 6	QCN 7	QCN 8
Species								
Abludomelita obtusata								
Angulus fabula			13	26	167			
Aricidea minuta		38						
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	26		77		90		38	90
Bathyporeia guilliamsoniana	13	13	128	26	64	26	90	26
Bathyporeia nana								
Bathyporeia spp.				38			13	
Branchiostoma lanceolatum								
Chaetozone setosa	13		26	38		13	13	
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus				13				
Echinocardium cordatum	51	13	38	13	26	64	26	13
Ensis directus	13							
Eteone foliosa	13		13				13	
Eteone longa	26			26	13		26	
Eunereis longissima	13							
Euspira pulchella			13					
Exogone spp.								
Gastrosaccus spinifer								13
Gastrosaccus spp.								
Lanice conchilega	115		13	64	13		103	
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica								
Magelona filiformis					13			
Magelona johnstoni	26			77	38			
Magelona mirabilis		13					26	
Magelona spp.								
Malmgreniella darbouxi	26		13	13	13		38	
Megaluropus agilis						13		
Monopseudocuma gilsoni				13				
Nemertea spp. A	13	13	13	38	13		13	
Nemertea spp. B				13			26	
Nephtys caeca			13					
Nephtys cirrosa	77	51	64	115	13	13	103	26
Nephtys hombergii					13			
Nototropis falcatus								
Ophelia borealis	13		26					
Ophiura albida								
Ophiura ophiura								

Annex 3: Box core data

Area	QCN							
Sample	QCN 1	QCN 2	QCN 3.0	QCN 4	QCN 5	QCN 6	QCN 7	QCN 8
Species								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa								
Pinnotheres pisum								
Poecilochaetus serpens								
Pontocrates arcticus				13			13	
Processa modica								
Pseudocuma longicorne								
Scolelepis bonnieri					26	13		
Scoloplos armiger	26	26	51	26	13	51	115	13
Spio goniocephala		26						
Spiophanes bombyx								
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa			13	13		13	26	
Thia scutellata								
Tubularia indivisa								
Urothoe brevicornis		13				13	26	
Urothoe poseidonis					372		13	
Urothoe spp.			13					

Area								
Sample	QCN 9	QCN 10	QCN 11.0	QCN 12	QCN 13.0	QCN 14	QCN 15.0	QCN 16
Species								
Abludomelita obtusata								
Angulus fabula	51	77				13	192	
Aricidea minuta								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	13	38	26	103	51	77	26	
Bathyporeia guilliamsoniana	38	154		90	26	13	38	13
Bathyporeia nana		13				13		
Bathyporeia spp.	26	26				13		
Branchiostoma lanceolatum								
Chaetozone setosa	26	64	13	13	26	26	38	
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus	13					13		
Echinocardium cordatum		13	13			26	26	
Ensis directus	13			13			13	13
Eteone foliosa								
Eteone longa	13			26			13	
Eunereis longissima				13				
Euspira pulchella								
Exogone spp.								
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega			13	423				77
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica								
Magelona filiformis	26	103					77	
Magelona johnstoni	26	128			13	26	26	13
Magelona mirabilis			13	13	13			
Magelona spp.								
Malmgreniella darbouxi				167				38
Megaluropus agilis			13					
Monopseudocuma gilsoni								
Nemertea spp. A	13						26	
Nemertea spp. B	13							
Nephtys caeca								
Nephtys cirrosa	38	26	103	103	64	51	26	64
Nephtys hombergii		13						
Nototropis falcatus								
Ophelia borealis		13		26				13
Ophiura albida	13							
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa								
Pinnotheres pisum								

Annex 3: Box core data

Area Sample Species	QCN 9	QCN 10	QCN 11.0	QCN 12	QCN 13.0	QCN 14	QCN 15.0	QCN 16
Poecilochaetus serpens				26				
Pontocrates arcticus	26							
Processa modica	38							
Pseudocuma longicorne								
Scolelepis bonnieri	13							
Scoloplos armiger	64	13	26	26	13		13	38
Spio goniocephala								
Spiophanes bombyx								
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa							103	
Thia scutellata								
Tubularia indivisa								
Urothoe brevicornis			13	38				
Urothoe poseidonis	192	128		77	51		231	
Urothoe spp.								

Area Sample Species	QCN 17	QCN 18	QCN 19	QCN 20	QCN 21	QCN 22	QCN 23.0	QCN 24
Abludomelita obtusata								
Angulus fabula			13	26				
Aricidea minuta								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	77	167	38	13	64	38	64	77
Bathyporeia guilliamsoniana	64	26	38	26				
Bathyporeia nana								13
Bathyporeia spp.	13			13	26		13	13
Branchiostoma lanceolatum								
Chaetozone setosa	13	38	26	38			26	26
Chamelea striatula							13	13
Diastylis cf. rugosa								
Donax vittatus		13		13			13	13
Echinocardium cordatum		38	13		13			13
Ensis directus								
Eteone foliosa						13		
Eteone longa					13			
Eunereis longissima								
Euspira pulchella							13	
Exogone spp.								
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega					13			
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica								
Magelona filiformis				38				
Magelona johnstoni			64	26		13		
Magelona mirabilis		13	13	26	13		13	
Magelona spp.							13	
Malmgreniella darbouxi					13			
Megaluropus agilis	13			13				
Monopseudocuma gilsoni								
Nemertea spp. A		26		26		26	26	
Nemertea spp. B								
Nephtys caeca							13	
Nephtys cirrosa	51	51	77	13	64	77	77	26
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis		13				13		
Ophiura albida							13	
Ophiura ophiura			13					
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa							13	
Pinnotheres pisum								
Poecilochaetus serpens								

Annex 3: Box core data

Area								
Sample	QCN 17	QCN 18	QCN 19	QCN 20	QCN 21	QCN 22	QCN 23.0	QCN 24
Species								
Pontocrates arcticus		13	13					
Processa modica					13			
Pseudocuma longicorne								
Scolelepis bonnieri	13				13			
Scoloplos armiger	64	64	38	13	103	26	26	26
Spio goniocephala								
Spiophanes bombyx								
Spisula spp.					13			
Spisula subtruncata								
Tellimya ferruginosa			26		13			
Thia scutellata								
Tubularia indivisa								
Urothoe brevicornis	51	90				64	26	
Urothoe poseidonis	13	26	26					
Urothoe spp.								

Area		QT						
Sample	QCN 25	QT 1	QT 2	QT 3	QT 4	QT 5	QT 6.0	QT 7
Species								
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana							13	
Bathyporeia elegans	192			38	26	26	13	51
Bathyporeia guilliamsoniana	26				13			77
Bathyporeia nana								
Bathyporeia spp.						13		
Branchiostoma lanceolatum								
Chaetozone setosa	13		13		26	13		13
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus								
Echinocardium cordatum	26				13	13		13
Ensis directus	13	13						
Eteone foliosa		13		13			13	
Eteone longa				64	13		13	
Eunereis longissima							13	
Euspira pulchella								
Exogone spp.								
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa		13						
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica			13					
Magelona filiformis								38
Magelona johnstoni		13	13				13	
Magelona mirabilis						13		
Magelona spp.								
Malmgreniella darbouxi								
Megaluropus agilis		13					13	
Monopseudocuma gilsoni								
Nemertea spp. A					13			13
Nemertea spp. B								
Nephtys caeca								
Nephtys cirrosa	26	26	26	64	51	64		13
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis			13	13				
Ophiura albida		38						
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.					13			
Phyllodoce mucosa								
Pinnotheres pisum								
Poecilochaetus serpens								

Annex 3: Box core data

Area		QT						
Sample	QCN 25	QT 1	QT 2	QT 3	QT 4	QT 5	QT 6.0	QT 7
Species								
Pontocrates arcticus		13		13				26
Processa modica						13		
Pseudocuma longicorne								
Scolelepis bonnieri	13							
Scoloplos armiger	51	13	26	115	103	77	38	103
Spio goniocephala			13					
Spiophanes bombyx				13				
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa	13							
Thia scutellata								
Tubularia indivisa								
Urothoe brevicornis			13				13	26
Urothoe poseidonis								
Urothoe spp.	13							

Area Sample Species	QT 8	QT 9	QT 10.0	QT 11	QT 12	QT 13	QT 14	QT 15
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta								
Asterias rubens			13					
Bathyporeia cf. elegans	13	13						
Bathyporeia cf. nana								
Bathyporeia elegans	13	13	38	90	51	192	26	38
Bathyporeia guilliamsoniana			26	13	26	13		38
Bathyporeia nana								
Bathyporeia spp.						13		
Branchiostoma lanceolatum				13				
Chaetozone setosa			26		51			38
Chamelea striatula								
Diastylis cf. rugosa	13							
Donax vittatus								
Echinocardium cordatum	26	13	26		13		13	
Ensis directus								
Eteone foliosa			13					
Eteone longa	13	13	13					13
Eunereis longissima			13					13
Euspira pulchella			26					
Exogone spp.								
Gastrosaccus spinifer	13							
Gastrosaccus spp.		13						
Lanice conchilega	13							
Leucothoe incisa	13		13					
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica						13		
Magelona filiformis	13		90		13		26	13
Magelona johnstoni		13	13	13		13		
Magelona mirabilis					26			
Magelona spp.								
Malmgreniella darbouxi								
Megaluropus agilis								
Monopseudocuma gilsoni								
Nemertea spp. A	38		26				13	
Nemertea spp. B								13
Nephtys caeca								
Nephtys cirrosa	26	64	26	38	77	64	26	64
Nephtys hombergii				13				
Nototropis falcatus						13		
Ophelia borealis		13				13		
Ophiura albida			13					
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena				13				
Phoronis spp.					13			
Phyllodoce mucosa								
Pinnotheres pisum						13		
Poecilochaetus serpens			13					167

Annex 3: Box core data

Area Sample Species	QT 8	QT 9	QT 10.0	QT 11	QT 12	QT 13	QT 14	QT 15
Pontocrates arcticus	13				26			
Processa modica			13	13				
Pseudocuma longicorne								
Scolelepis bonnieri								
Scoloplos armiger	103	26	321	90	13	51	141	141
Spio goniocephala								
Spiophanes bombyx								
Spisula spp.								13
Spisula subtruncata		13						
Tellimya ferruginosa								
Thia scutellata								13
Tubularia indivisa			13					
Urothoe brevicornis	13				13			13
Urothoe poseidonis								
Urothoe spp.								

Area Sample Species	QT 16	QT 18.0	QT 19	QT 20	QT 21.0	QT 22	QT 23	QT 24
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	51	115	77	90	77	51	51	51
Bathyporeia guilliamsoniana	13	26	26	13	38			13
Bathyporeia nana								
Bathyporeia spp.					13			
Branchiostoma lanceolatum								
Chaetozone setosa	26		13	26	38		13	13
Chamelea striatula	13							
Diastylis cf. rugosa								
Donax vittatus								13
Echinocardium cordatum		13	13	26	13	13		
Ensis directus								
Eteone foliosa							13	
Eteone longa				13	13	38	26	
Eunereis longissima								
Euspira pulchella								
Exogone spp.								
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica								13
Magelona filiformis	51		13	38		13		26
Magelona johnstoni				13		13	13	
Magelona mirabilis		13			13		13	
Magelona spp.								
Malmgreniella darbouxi								
Megaluropus agilis								13
Monopseudocuma gilsoni								
Nemertea spp. A	38			26		26		26
Nemertea spp. B								
Nephtys caeca								
Nephtys cirrosa		13	26	90	26	26	38	38
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis	13			13				
Ophiura albida								
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa							13	
Pinnotheres pisum								
Poecilochaetus serpens				38				

Annex 3: Box core data

Area Sample Species	QT 16	QT 18.0	QT 19	QT 20	QT 21.0	QT 22	QT 23	QT 24
Pontocrates arcticus	13	26						
Processa modica	13				13			
Pseudocuma longicorne								
Scolelepis bonnieri								
Scoloplos armiger	167	167	26	295	38	26	51	26
Spio goniocephala								
Spiophanes bombyx				13				
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa								
Thia scutellata		13		26	13			
Tubularia indivisa								
Urothoe brevicornis	13	64	13	38		13	13	77
Urothoe poseidonis								
Urothoe spp.								

Area Sample Species	QT 25	QT 26	QT 27	QT 28	QT 29	QT 30	QT 31	QT 32
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	13	26	26	38	26	26	13	13
Bathyporeia guilliamsoniana								
Bathyporeia nana								
Bathyporeia spp.								
Branchiostoma lanceolatum								
Chaetozone setosa		13	13					
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus								
Echinocardium cordatum	26			51	13	13	13	
Ensis directus				13				
Eteone foliosa					13			
Eteone longa	26		13		26			26
Eunereis longissima								
Euspira pulchella				13				
Exogone spp.								
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica		26						
Magelona filiformis	13	13	13	26				
Magelona johnstoni			51	26			13	
Magelona mirabilis								
Magelona spp.								
Malmgreniella darbouxi								
Megaluropus agilis		13						
Monopseudocuma gilsoni								
Nemertea spp. A		13						
Nemertea spp. B					13		26	
Nephtys caeca								
Nephtys cirrosa	64	51	64	13	38	51	51	64
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis								
Ophiura albida			13					13
Ophiura ophiura				13				
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa								
Pinnotheres pisum								
Poecilochaetus serpens								

Annex 3: Box core data

Area Sample Species	QT 25	QT 26	QT 27	QT 28	QT 29	QT 30	QT 31	QT 32
Pontocrates arcticus			13	13				
Processa modica								
Pseudocuma longicorne								
Scolelepis bonnieri					13			
Scoloplos armiger	51	51	38	13	38	26	64	51
Spio goniocephala								
Spiophanes bombyx								
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa								
Thia scutellata					13			
Tubularia indivisa								
Urothoe brevicornis		26	64	77	13	38		
Urothoe poseidonis								
Urothoe spp.					13	13		

Area Sample Species	QT 33.0	QT 34	QT 35	QT 36	QT 37	QT 38	QT 39	QT 40.0
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans		64	51	64	38	38	26	
Bathyporeia guilliamsoniana				13		26		13
Bathyporeia nana								
Bathyporeia spp.			13					
Branchiostoma lanceolatum								
Chaetozone setosa					13	51		13
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus								
Echinocardium cordatum	13				13		13	
Ensis directus				13			13	
Eteone foliosa							13	13
Eteone longa	13	13		13	13	38	13	
Eunereis longissima								
Euspira pulchella					13			
Exogone spp.								
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica		13						13
Magelona filiformis		13					13	
Magelona johnstoni								
Magelona mirabilis				13	26		13	
Magelona spp.	13	13						
Malmgreniella darbouxi								
Megaluropus agilis		13			13	26		
Monopseudocuma gilsoni			13			26		
Nemertea spp. A		13			13	13	26	13
Nemertea spp. B								
Nephtys caeca								
Nephtys cirrosa	13	64	90	26	26	38	38	26
Nephtys hombergii								
Nototropis falcatus			13					
Ophelia borealis				13				
Ophiura albida			13	13			13	
Ophiura ophiura					13			
Perioculodes longimanus	13							
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa								
Pinnotheres pisum								
Poecilochaetus serpens								

Annex 3: Box core data

Area Sample Species	QT 33.0	QT 34	QT 35	QT 36	QT 37	QT 38	QT 39	QT 40.0
Pontocrates arcticus	13		13	13				
Processa modica								
Pseudocuma longicorne								
Scolelepis bonnieri			13					
Scoloplos armiger	77	77	90	38	38	26	51	64
Spio goniocephala								
Spiophanes bombyx								
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa								
Thia scutellata							13	
Tubularia indivisa								
Urothoe brevicornis	13	13		13			13	
Urothoe poseidonis								
Urothoe spp.								

Area								
Sample	QT 41	QT 42	QT 43	QT 44.0	QT 45	QT 46	QT 47	QT 48
Species								
Abludomelita obtusata				38				
Angulus fabula								
Aricidea minuta	13							
Asterias rubens				13			13	
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	13	13	13		13	64	13	13
Bathyporeia guilliamsoniana		13				13	13	
Bathyporeia nana								
Bathyporeia spp.								
Branchiostoma lanceolatum								
Chaetozone setosa					13		26	
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus						13		
Echinocardium cordatum			13			13		
Ensis directus		13		13		13		
Eteone foliosa	26							
Eteone longa	38	13			38	13		26
Eunereis longissima								13
Euspira pulchella								
Exogone spp.								
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega				13			13	
Leucothoe incisa								
Liocarcinus cf. holsatus							13	
Liocarcinus holsatus								
Macoma balthica								
Magelona filiformis	13			13				
Magelona johnstoni				13				
Magelona mirabilis	13	13			26			
Magelona spp.								
Malmgreniella darbouxi				13				
Megaluropus agilis			13					
Monopseudocuma gilsoni					13			13
Nemertea spp. A						13	13	13
Nemertea spp. B		13						
Nephtys caeca								
Nephtys cirrosa	90	51	38	38	64	26	51	77
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis			13	13				38
Ophiura albida		13		13				
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								51
Phyllodoce mucosa								
Pinnotheres pisum								
Poecilochaetus serpens								

Annex 3: Box core data

Area Sample Species	QT 41	QT 42	QT 43	QT 44.0	QT 45	QT 46	QT 47	QT 48
Pontocrates arcticus	13			13				26
Processa modica								
Pseudocuma longicorne								
Scolelepis bonnieri								
Scoloplos armiger	64	38	64	51	51	51	77	51
Spio goniocephala								
Spiophanes bombyx								
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa			13					
Thia scutellata								13
Tubularia indivisa								
Urothoe brevicornis	13		13					13
Urothoe poseidonis								
Urothoe spp.								

Area Sample Species	QCS QCS 1	QCS 2	QCS 3.0	QCS 4	QCS 5	QCS 6	QCS 7	QCS 8
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta		26						
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	13					13	13	
Bathyporeia guilliamsoniana	13		13					13
Bathyporeia nana								
Bathyporeia spp.								
Branchiostoma lanceolatum								
Chaetozone setosa				13				
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus								
Echinocardium cordatum						13	13	192
Ensis directus		13						
Eteone foliosa	13		13				13	
Eteone longa				13				
Eunereis longissima								
Euspira pulchella					13		13	
Exogone spp.								
Gastrosaccus spinifer				13				
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica	13							
Magelona filiformis								
Magelona johnstoni		13			13			
Magelona mirabilis				13				
Magelona spp.								
Malmgreniella darbouxi								
Megaluropus agilis	13			13		13		
Monopseudocuma gilsoni								
Nemertea spp. A				13				
Nemertea spp. B		13		13				
Nephtys caeca								
Nephtys cirrosa	38	38	51	51	13	51	64	13
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis	13	38	64			13	26	
Ophiura albida								
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa								
Pinnotheres pisum								
Poecilochaetus serpens								

Annex 3: Box core data

Area	QCS							
Sample	QCS 1	QCS 2	QCS 3.0	QCS 4	QCS 5	QCS 6	QCS 7	QCS 8
Species								
Pontocrates arcticus			13					
Processa modica								
Pseudocuma longicorne								
Scolelepis bonnieri				13	13	13		
Scoloplos armiger	38	26	51	26	51		38	
Spio goniocephala		13				13		
Spiophanes bombyx								
Spisula spp.					13			
Spisula subtruncata								
Tellimya ferruginosa								
Thia scutellata	13		13					
Tubularia indivisa								
Urothoe brevicornis								
Urothoe poseidonis								
Urothoe spp.								

Area								
Sample	QCS 9	QCS 10	QCS 11.0	QCS 12	QCS 13.0	QCS 14	QCS 15.0	QCS 16
Species								
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	13			13	26	13	13	
Bathyporeia guilliamsoniana				26				
Bathyporeia nana								
Bathyporeia spp.						13		
Branchiostoma lanceolatum								
Chaetozone setosa					13			
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus								
Echinocardium cordatum	13	38		38	26		38	
Ensis directus	13							
Eteone foliosa				13	13			
Eteone longa					13			
Eunereis longissima								
Euspira pulchella					13			
Exogone spp.	26		13	13	26			26
Gastrosaccus spinifer							13	
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa		13		13				
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica							13	13
Magelona filiformis					13			
Magelona johnstoni						13		
Magelona mirabilis			13			13		26
Magelona spp.		13						
Malmgreniella darbouxi								
Megaluropus agilis				13				
Monopseudocuma gilsoni								
Nemertea spp. A								
Nemertea spp. B								
Nephtys caeca								
Nephtys cirrosa	64	13	77	141	115	64	26	13
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis	13	13		13	26	77	13	
Ophiura albida								
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa								
Pinnotheres pisum								
Poecilochaetus serpens								

Annex 3: Box core data

Area Sample Species	QCS 9	QCS 10	QCS 11.0	QCS 12	QCS 13.0	QCS 14	QCS 15.0	QCS 16
Pontocrates arcticus				13				
Processa modica								
Pseudocuma longicorne	13							
Scolelepis bonnieri	13	13						
Scoloplos armiger	13	103		13	77	64	77	
Spio goniocephala				13				
Spiophanes bombyx						13		
Spisula spp.	13							
Spisula subtruncata								
Tellimya ferruginosa		26						
Thia scutellata		13			26		13	
Tubularia indivisa		13						
Urothoe brevicornis								
Urothoe poseidonis								
Urothoe spp.								

Area Sample Species	QCS 17	QCS 18	QCS 19	QCS 20	QCS 21	QCS 22	QCS 23.0	QCS 24
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta				26				13
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	26						13	38
Bathyporeia guilliamsoniana	13		13	13		13	13	
Bathyporeia nana								
Bathyporeia spp.								
Branchiostoma lanceolatum								
Chaetozone setosa				13				
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus								
Echinocardium cordatum		13			13	26	13	
Ensis directus			13				13	
Eteone foliosa								
Eteone longa				13				
Eunereis longissima								
Euspira pulchella								
Exogone spp.			64					
Gastrosaccus spinifer				26				13
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus				13				
Macoma balthica								
Magelona filiformis								
Magelona johnstoni		13						
Magelona mirabilis			13	13	13			26
Magelona spp.						13		
Malmgreniella darbouxi								
Megaluropus agilis			13	26				
Monopseudocuma gilsoni	26		13					
Nemertea spp. A				13				
Nemertea spp. B					13			
Nephtys caeca								
Nephtys cirrosa	38	64	38	77	38	26	38	64
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis	13		26	26				
Ophiura albida								
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.			26					
Phyllodoce mucosa								
Pinnotheres pisum								
Poecilochaetus serpens								

Annex 3: Box core data

Area Sample Species	QCS 17	QCS 18	QCS 19	QCS 20	QCS 21	QCS 22	QCS 23.0	QCS 24
Pontocrates arcticus								13
Processa modica								
Pseudocuma longicorne								
Scolelepis bonnieri			13			13	13	
Scoloplos armiger			13	26		13	13	
Spio goniocephala			13	13				
Spiophanes bombyx								
Spisula spp.								
Spisula subtruncata							13	
Tellimya ferruginosa		13						
Thia scutellata								
Tubularia indivisa								
Urothoe brevicornis	13							13
Urothoe poseidonis				13				13
Urothoe spp.								

Area Sample Species	QCS 25	QAW QAW 1.0	QAW 2.0	QAW 3.0	QAW 4.0	QAW 5.0	QAW 6.0
Abludomelita obtusata							
Angulus fabula							
Aricidea minuta							
Asterias rubens							
Bathyporeia cf. elegans							
Bathyporeia cf. nana							13
Bathyporeia elegans	13	77	51	26	13	38	26
Bathyporeia guilliamsoniana	13					77	
Bathyporeia nana							
Bathyporeia spp.			13				
Branchiostoma lanceolatum							
Chaetozone setosa			13		38		13
Chamelea striatula							
Diastylis cf. rugosa							
Donax vittatus							
Echinocardium cordatum	13			38		13	26
Ensis directus			13				13
Eteone foliosa							
Eteone longa		13	13		13	77	
Eunereis longissima							
Euspira pulchella							
Exogone spp.							
Gastrosaccus spinifer		13					
Gastrosaccus spp.							
Lanice conchilega							
Leucothoe incisa							
Liocarcinus cf. holsatus							
Liocarcinus holsatus							
Macoma balthica		13			13		
Magelona filiformis			26		13	38	
Magelona johnstoni				13		13	
Magelona mirabilis	13				38		
Magelona spp.							
Malmgreniella darbouxi							
Megaluropus agilis					13		
Monopseudocuma gilsoni							13
Nemertea spp. A		26	13		26	13	
Nemertea spp. B					13		
Nephtys caeca							
Nephtys cirrosa	77	26	38	77	13	13	51
Nephtys hombergii							
Nototropis falcatus							
Ophelia borealis	26	38	13	13	13		
Ophiura albida							
Ophiura ophiura			26				
Perioculodes longimanus							
Pestarella tyrrhena							
Phoronis spp.						13	
Phyllodoce mucosa							
Pinnotheres pisum							
Poecilochaetus serpens						38	

Annex 3: Box core data

Area		QAW					
Sample	QCS 25	QAW 1.0	QAW 2.0	QAW 3.0	QAW 4.0	QAW 5.0	QAW 6.0
Species							
Pontocrates arcticus		13			13		
Processa modica							
Pseudocuma longicorne							
Scolelepis bonnieri							
Scoloplos armiger	13	38	26	38	103	231	282
Spio goniocephala							
Spiophanes bombyx							
Spisula spp.							
Spisula subtruncata							
Tellimya ferruginosa				13			38
Thia scutellata							
Tubularia indivisa							
Urothoe brevicornis						13	38
Urothoe poseidonis							
Urothoe spp.							

Annex 3b: Box core biomass data (g AFDW/m²)

Area	QCN							
Sample	QCN 1	QCN 2	QCN 3.0	QCN 4	QCN 5	QCN 6	QCN 7	QCN 8
Species								
Abludomelita obtusata								
Angulus fabula			0,0215	0,1311	6,1305			
Aricidea minuta		0,0051						
Aricidea spp.								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	0,0077		0,0231		0,0269		0,0115	0,0269
Bathyporeia guilliamsoniana	0,0038	0,0038	0,0385	0,0077	0,0192	0,0077	0,0269	0,0077
Bathyporeia nana								
Bathyporeia spp.				0,0115			0,0038	
Branchiostoma lanceolatum								
Chaetozone setosa	0,0045		0,0057	0,0109		0,0025	0,0023	
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus				1,4777				
Echinocardium cordatum	25,4587	2,9461	17,9129	5,3321	14,2115	13,3781	13,5495	8,2175
Ensis directus	8,1702							
Eteone foliosa	0,0217		0,0082				0,0029	
Eteone longa	0,0018			0,0018	0,0049		0,0016	
Eunereis longissima	2,1594							
Euspira pulchella			0,1479					
Gastrosaccus spinifer								0,0128
Gastrosaccus spp.								
Lanice conchilega	1,6665		0,0833	0,9124	0,1075		2,0199	
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica								
Magelona filiformis					0,0025			
Magelona johnstoni	0,0437			0,0498	0,0650			
Magelona mirabilis		0,0199					0,0535	
Magelona spp.								
Malmgreniella darbouxi	0,0217		0,0172	0,0176	0,0144		0,0816	
Megaluropus agilis						0,0038		
Monopseudocuma gilsoni				0,0038				
Nemertea spp. A	0,0041	0,0254	0,0094	0,0293	0,0078		0,0228	
Nemertea spp. B				0,0490			0,0349	
Nephtys caeca			0,4226					
Nephtys cirrosa	0,2970	0,1674	0,2632	0,6630	0,0671	0,0250	0,3817	0,0394
Nephtys hombergii					0,1161			
Nototropis falcatus								
Ophelia borealis	0,0544		0,1001					
Ophiura albida								
Ophiura ophiura								

Annex 3: Box core data

Area	QCN							
Sample	QCN 1	QCN 2	QCN 3.0	QCN 4	QCN 5	QCN 6	QCN 7	QCN 8
Species								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa								
Pinnotheres pisum								
Poecilochaetus serpens								
Pontocrates arcticus				0,0038			0,0038	
Processa modica								
Pseudocuma longicorne								
Scolelepis bonnieri					0,2353	0,0843		
Scoloplos armiger	0,0416	0,1120	0,0441	0,0133	0,0031	0,2652	0,3664	0,0033
Spio goniocephala		0,0051						
Spiophanes bombyx								
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa			0,0395	0,0191		0,0081	0,0461	
Thia scutellata								
Tubularia indivisa								
Urothoe brevicornis		0,0038				0,0038	0,0077	
Urothoe poseidonis					0,1115		0,0038	
Urothoe spp.			0,0038					

Area Sample Species	QCN 9	QCN 10	QCN 11.0	QCN 12	QCN 13.0	QCN 14	QCN 15.0	QCN 16
Abludomelita obtusata								
Angulus fabula	0,8207	2,9146				0,0095	8,8079	
Aricidea minuta								
Aricidea spp.								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	0,0038	0,0115	0,0077	0,0308	0,0154	0,0231	0,0077	
Bathyporeia guilliamsoniana	0,0115	0,0462		0,0269	0,0077	0,0038	0,0115	0,0038
Bathyporeia nana		0,0038				0,0038		
Bathyporeia spp.	0,0077	0,0077				0,0038		
Branchiostoma lanceolatum								
Chaetozone setosa	0,0055	0,0357	0,0039	0,0084	0,0117	0,0107	0,0109	
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus	1,6143					1,5153		
Echinocardium cordatum		5,3321	5,3321			14,2508	13,1835	
Ensis directus	15,3977			15,3977			15,3977	45,9023
Eteone foliosa								
Eteone longa	0,0031			0,0016			0,0025	
Eunereis longissima				4,8468				
Euspira pulchella								
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega			0,1696	7,8129				2,7715
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica								
Magelona filiformis	0,0139	0,0349					0,0219	
Magelona johnstoni	0,0172	0,1065			0,0320	0,0207	0,0154	0,0113
Magelona mirabilis			0,0043	0,0018	0,0074			
Magelona spp.								
Malmgreniella darbouxi				0,1590				0,0751
Megaluropus agilis			0,0038					
Monopseudocuma gilsoni								
Nemertea spp. A	0,0059						0,0324	
Nemertea spp. B	0,0176							
Nephtys caeca								
Nephtys cirrosa	0,0960	0,0062	0,3017	0,5805	0,2295	0,4263	0,3897	0,5565
Nephtys hombergii		0,5005						
Nototropis falcatus								
Ophelia borealis		0,1393		0,0345				0,0203
Ophiura albida	0,9375							
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa								
Pinnotheres pisum								

Annex 3: Box core data

Area Sample Species	QCN 9	QCN 10	QCN 11.0	QCN 12	QCN 13.0	QCN 14	QCN 15.0	QCN 16
Poecilochaetus serpens				0,0447				
Pontocrates arcticus	0,0077							
Processa modica	0,7530							
Pseudocuma longicorne								
Scolelepis bonnieri	0,0907							
Scoloplos armiger	0,0464	0,0021	0,1920	0,0057	0,0211		0,0215	0,3223
Spio goniocephala								
Spiophanes bombyx								
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa							0,1126	
Thia scutellata								
Tubularia indivisa								
Urothoe brevicornis			0,0038	0,0115				
Urothoe poseidonis	0,0577	0,0385		0,0231	0,0154		0,0692	
Urothoe spp.								

Area Sample Species	QCN 17	QCN 18	QCN 19	QCN 20	QCN 21	QCN 22	QCN 23.0	QCN 24
Abludomelita obtusata								
Angulus fabula			0,0050	0,0140				
Aricidea minuta								
Aricidea spp.								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	0,0231	0,0500	0,0115	0,0038	0,0192	0,0115	0,0192	0,0231
Bathyporeia guilliamsoniana	0,0192	0,0077	0,0115	0,0077				
Bathyporeia nana								0,0038
Bathyporeia spp.	0,0038			0,0038	0,0077		0,0038	0,0038
Branchiostoma lanceolatum								
Chaetozone setosa	0,0031	0,0492	0,0129	0,0119			0,0029	0,0287
Chamelea striatula							0,0065	0,1296
Diastylis cf. rugosa								
Donax vittatus		25,4678		0,0373			0,0233	2,0913
Echinocardium cordatum		16,4553	5,3321		3,2956			5,3321
Ensis directus								
Eteone foliosa						0,0164		
Eteone longa					0,0018			
Eunereis longissima								
Euspira pulchella							0,1678	
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega					0,1815			
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica								
Magelona filiformis				0,0205				
Magelona johnstoni			0,0014	0,0289		0,0318		
Magelona mirabilis		0,0082	0,0767	0,0246	0,0293		0,0035	
Magelona spp.							0,0318	
Malmgreniella darbouxi					0,0096			
Megaluropus agilis	0,0038			0,0038				
Monopseudocuma gilsoni								
Nemertea spp. A		0,0131		0,0053		0,0304	0,0101	
Nemertea spp. B								
Nephtys caeca							6,9026	
Nephtys cirrosa	0,3645	0,0166	0,3120	0,0150	0,1748	0,0544	0,4230	0,0572
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis		0,0295				0,0172		
Ophiura albida							0,9062	
Ophiura ophiura			5,2266					
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa							0,0010	
Pinnotheres pisum								

Annex 3: Box core data

Area Sample Species	QCN 17	QCN 18	QCN 19	QCN 20	QCN 21	QCN 22	QCN 23.0	QCN 24
Poecilochaetus serpens								
Pontocrates arcticus		0,0038	0,0038					
Processa modica					0,3215			
Pseudocuma longicorne								
Scolelepis bonnieri	0,1682				0,0125			
Scoloplos armiger	0,2008	0,0767	0,0265	0,0369	0,3040	0,0314	0,0160	0,0207
Spio goniocephala								
Spiophanes bombyx								
Spisula spp.					0,0086			
Spisula subtruncata								
Tellimya ferruginosa			0,0094		0,0408			
Thia scutellata								
Tubularia indivisa								
Urothoe brevicornis	0,0154	0,0269				0,0192	0,0077	
Urothoe poseidonis	0,0038	0,0077	0,0077					
Urothoe spp.								

Area Sample Species	QCN 25	QT QT 1	QT 2	QT 3	QT 4	QT 5	QT 6.0	QT 7
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta								
Aricidea spp.								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana							0,0038	
Bathyporeia elegans	0,0577			0,0115	0,0077	0,0077	0,0038	0,0154
Bathyporeia guilliamsoniana	0,0077				0,0038			0,0231
Bathyporeia nana								
Bathyporeia spp.						0,0038		
Branchiostoma lanceolatum								
Chaetozone setosa	0,0033		0,0129		0,0027	0,0059		0,0031
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus								
Echinocardium cordatum	14,3231				5,3321	8,9318		5,3321
Ensis directus	15,3977	9,0980						
Eteone foliosa		0,0213		0,0168			0,1584	
Eteone longa				0,0047	0,0012		0,0010	
Eunereis longissima							0,0197	
Euspira pulchella								
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa		0,0038						
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica			0,5499					
Magelona filiformis								0,0107
Magelona johnstoni		0,0314	0,0568				0,0691	
Magelona mirabilis						0,0047		
Magelona spp.								
Malmgreniella darbouxi								
Megaluropus agilis		0,0038					0,0038	
Monopseudocuma gilsoni								
Nemertea spp. A					0,0103			0,0057
Nemertea spp. B								
Nephtys caeca								
Nephtys cirrosa	0,0870	0,2736	0,0847	0,3801	0,1428	0,2025		0,1333
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis			0,0825	0,4671				
Ophiura albida		1,5742						
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.					0,0006			
Phyllodoce mucosa								
Pinnotheres pisum								

Annex 3: Box core data

Area		QT						
Sample	QCN 25	QT 1	QT 2	QT 3	QT 4	QT 5	QT 6.0	QT 7
Species								
Poecilochaetus serpens								
Pontocrates arcticus		0,0038		0,0038				0,0077
Processa modica						0,0985		
Pseudocuma longicorne								
Scolelepis bonnieri	0,0492							
Scoloplos armiger	0,1298	0,0002	0,0599	0,0297	0,0468	0,0484	0,0158	0,2119
Spio goniocephala			0,0014					
Spiophanes bombyx				0,0055				
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa	0,0304							
Thia scutellata								
Tubularia indivisa								
Urothoe brevicornis			0,0038				0,0038	0,0077
Urothoe poseidonis								
Urothoe spp.	0,0038							

Area Sample Species	QT 8	QT 9	QT 10.0	QT 11	QT 12	QT 13	QT 14	QT 15
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta								
Aricidea spp.								
Asterias rubens			1,4857					
Bathyporeia cf. elegans	0,0038	0,0038						
Bathyporeia cf. nana								
Bathyporeia elegans	0,0038	0,0038	0,0115	0,0269	0,0154	0,0577	0,0077	0,0115
Bathyporeia guilliamsoniana			0,0077	0,0038	0,0077	0,0038		0,0115
Bathyporeia nana								
Bathyporeia spp.						0,0038		
Branchiostoma lanceolatum				0,0000				
Chaetozone setosa			0,0076		0,0207			0,0119
Chamelea striatula								
Diastylis cf. rugosa	0,0038							
Donax vittatus								
Echinocardium cordatum	19,2820	5,8144	14,5970		5,3321		5,3321	
Ensis directus								
Eteone foliosa			0,0008					
Eteone longa	0,0008	0,0012	0,0201					0,0012
Eunereis longissima			0,0256					1,8885
Euspira pulchella			0,4118					
Gastrosaccus spinifer	0,0128							
Gastrosaccus spp.		0,0128						
Lanice conchilega	0,0595							
Leucothoe incisa	0,0038		0,0038					
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica						0,5817		
Magelona filiformis	0,0014		0,0045		0,0016		0,0148	0,0018
Magelona johnstoni		0,0098	0,0958	0,2397		0,0316		
Magelona mirabilis					0,0197			
Magelona spp.								
Malmgreniella darbouxi								
Megaluropus agilis								
Monopseudocuma gilsoni								
Nemertea spp. A	0,0410		0,0238				0,0018	
Nemertea spp. B								0,0164
Nephtys caeca								
Nephtys cirrosa	0,0224	0,1863	0,6818	0,0032	0,1701	0,1586	0,0708	0,0301
Nephtys hombergii				3,3046				
Nototropis falcatus						0,0038		
Ophelia borealis		0,0406				0,3272		
Ophiura albida			0,0008					
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena				3,0872				
Phoronis spp.					0,0185			
Phyllodoce mucosa								
Pinnotheres pisum						0,0120		

Annex 3: Box core data

Area Sample Species	QT 8	QT 9	QT 10.0	QT 11	QT 12	QT 13	QT 14	QT 15
Poecilochaetus serpens			0,0037					0,1703
Pontocrates arcticus	0,0038				0,0077			
Processa modica			0,1375	0,1329				
Pseudocuma longicorne								
Scolelepis bonnieri								
Scoloplos armiger	0,0964	0,0386	0,2240	0,0416	0,0983	0,0726	0,1670	0,1438
Spio goniocephala								
Spiophanes bombyx								
Spisula spp.								0,0859
Spisula subtruncata		0,7085						
Tellimya ferruginosa								
Thia scutellata								0,0496
Tubularia indivisa			0,0000					
Urothoe brevicornis	0,0038				0,0038			0,0038
Urothoe poseidonis								
Urothoe spp.								

Area Sample Species	QT 16	QT 18.0	QT 19	QT 20	QT 21.0	QT 22	QT 23	QT 24
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta								
Aricidea spp.								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	0,0154	0,0346	0,0231	0,0269	0,0231	0,0154	0,0154	0,0154
Bathyporeia guilliamsoniana	0,0038	0,0077	0,0077	0,0038	0,0115			0,0038
Bathyporeia nana								
Bathyporeia spp.					0,0038			
Branchiostoma lanceolatum								
Chaetozone setosa	0,0115		0,0039	0,0139	0,0074		0,0076	0,0035
Chamelea striatula	0,9249							
Diastylis cf. rugosa								
Donax vittatus								1,9957
Echinocardium cordatum		5,3321	5,3321	14,5291	5,3321	5,3321		
Ensis directus								
Eteone foliosa							0,0033	
Eteone longa				0,0006	0,0004	0,0018	0,0018	
Eunereis longissima								
Euspira pulchella								
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica								0,3131
Magelona filiformis	0,0195		0,0031	0,0084		0,0076		0,0150
Magelona johnstoni				0,0207		0,0181	0,0228	
Magelona mirabilis		0,0154			0,0031		0,0025	
Magelona spp.								
Malmgreniella darbouxi								
Megaluropus agilis								0,0038
Monopseudocuma gilsoni								
Nemertea spp. A	0,0310			0,0121		0,1114		0,0494
Nemertea spp. B								
Nephtys caeca								
Nephtys cirrosa		0,0689	0,1489	0,3698	0,1405	0,1102	0,3417	0,1594
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis	0,0103			0,1649				
Ophiura albida								
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa							0,0267	
Pinnotheres pisum								

Annex 3: Box core data

Area Sample Species	QT 16	QT 18.0	QT 19	QT 20	QT 21.0	QT 22	QT 23	QT 24
Poecilochaetus serpens				0,0310				
Pontocrates arcticus	0,0038	0,0077						
Processa modica	0,2165				0,1267			
Pseudocuma longicorne								
Scolelepis bonnieri								
Scoloplos armiger	0,1945	0,4076	0,0404	0,2535	0,0849	0,0080	0,1742	0,0209
Spio goniocephala								
Spiophanes bombyx				0,0156				
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa								
Thia scutellata		0,8453		0,0468	0,0528			
Tubularia indivisa								
Urothoe brevicornis	0,0038	0,0192	0,0038	0,0115		0,0038	0,0038	0,0231
Urothoe poseidonis								
Urothoe spp.								

Area Sample Species	QT 25	QT 26	QT 27	QT 28	QT 29	QT 30	QT 31	QT 32
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta								
Aricidea spp.								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	0,0038	0,0077	0,0077	0,0115	0,0077	0,0077	0,0038	0,0038
Bathyporeia guilliamsoniana								
Bathyporeia nana								
Bathyporeia spp.								
Branchiostoma lanceolatum								
Chaetozone setosa		0,0144	0,0115					
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus								
Echinocardium cordatum	11,5819			22,6081	5,3321	5,3321	5,3321	
Ensis directus				15,3977				
Eteone foliosa					0,0062			
Eteone longa	0,0016		0,0006		0,0021			0,0014
Eunereis longissima								
Euspira pulchella				0,0834				
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica		0,6594						
Magelona filiformis	0,0027	0,0023	0,0027	0,0033				
Magelona johnstoni			0,0588	0,0287			0,0269	
Magelona mirabilis								
Magelona spp.								
Malmgreniella darbouxi								
Megaluropus agilis		0,0038						
Monopseudocuma gilsoni								
Nemertea spp. A		0,0072						
Nemertea spp. B					0,0174		0,0203	
Nephtys caeca								
Nephtys cirrosa	0,1616	0,1430	0,0849	0,0080	0,1461	0,1926	0,1428	0,2359
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis								
Ophiura albida			0,5563					0,9024
Ophiura ophiura				1,3200				
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa								
Pinnotheres pisum								

Annex 3: Box core data

Area Sample Species	QT 25	QT 26	QT 27	QT 28	QT 29	QT 30	QT 31	QT 32
Poecilochaetus serpens								
Pontocrates arcticus			0,0038	0,0038				
Processa modica								
Pseudocuma longicorne								
Scolelepis bonnieri					0,1479			
Scoloplos armiger	0,0127	0,0677	0,0094	0,0277	0,0544	0,0049	0,3424	0,1346
Spio goniocephala								
Spiophanes bombyx								
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa								
Thia scutellata					1,0394			
Tubularia indivisa								
Urothoe brevicornis		0,0077	0,0192	0,0231	0,0038	0,0115		
Urothoe poseidonis								
Urothoe spp.					0,0038	0,0038		

Area Sample Species	QT 33.0	QT 34	QT 35	QT 36	QT 37	QT 38	QT 39	QT 40.0
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta								
Aricidea spp.								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans		0,0192	0,0154	0,0192	0,0115	0,0115	0,0077	
Bathyporeia guilliamsoniana				0,0038		0,0077		0,0038
Bathyporeia nana								
Bathyporeia spp.			0,0038					
Branchiostoma lanceolatum								
Chaetozone setosa					0,0150	0,0183		0,0066
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus								
Echinocardium cordatum	5,3321				1,8741		5,3321	
Ensis directus				15,3977			15,3977	
Eteone foliosa							0,0023	0,0086
Eteone longa	0,0006	0,0014		0,0006	0,0025	0,0016	0,0004	
Eunereis longissima								
Euspira pulchella					0,2073			
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica		0,3521						0,0181
Magelona filiformis		0,0029					0,0049	
Magelona johnstoni								
Magelona mirabilis				0,0168	0,0125		0,0759	
Magelona spp.	0,0043	0,0408						
Malmgreniella darbouxi								
Megaluropus agilis		0,0038			0,0038	0,0077		
Monopseudocuma gilsoni			0,0038			0,0077		
Nemertea spp. A		0,0441			0,0086	0,0078	0,0199	0,0193
Nemertea spp. B								
Nephtys caeca								
Nephtys cirrosa	0,0018	0,1467	0,4513	0,0663	0,1895	0,0581	0,7249	0,0258
Nephtys hombergii								
Nototropis falcatus			0,0038					
Ophelia borealis				0,0008				
Ophiura albida			0,6311	0,7594			0,7911	
Ophiura ophiura					2,0774			
Perioculodes longimanus	0,0038							
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa								
Pinnotheres pisum								

Annex 3: Box core data

Area								
Sample	QT 33.0	QT 34	QT 35	QT 36	QT 37	QT 38	QT 39	QT 40.0
Species								
Poecilochaetus serpens								
Pontocrates arcticus	0,0038		0,0038	0,0038				
Processa modica								
Pseudocuma longicorne								
Scolelepis bonnieri			0,0390					
Scoloplos armiger	0,0494	0,0205	0,0281	0,0792	0,0049	0,0043	0,1044	0,1102
Spio goniocephala								
Spiophanes bombyx								
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa								
Thia scutellata							0,0366	
Tubularia indivisa								
Urothoe brevicornis	0,0038	0,0038		0,0038			0,0038	
Urothoe poseidonis								
Urothoe spp.								

Area Sample Species	QT 41	QT 42	QT 43	QT 44.0	QT 45	QT 46	QT 47	QT 48
Abludomelita obtusata				0,0115				
Angulus fabula								
Aricidea minuta	0,0018							
Aricidea spp.								
Asterias rubens				14,0657			0,4961	
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	0,0038	0,0038	0,0038		0,0038	0,0192	0,0038	0,0038
Bathyporeia guilliamsoniana		0,0038				0,0038	0,0038	
Bathyporeia nana								
Bathyporeia spp.								
Branchiostoma lanceolatum								
Chaetozone setosa					0,0039		0,0113	
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus						1,9906		
Echinocardium cordatum			9,4266			5,3321		
Ensis directus		14,6634		0,0047		15,3977		
Eteone foliosa	0,0400							
Eteone longa	0,0047	0,0004			0,0027	0,0012		0,0025
Eunereis longissima								2,3918
Euspira pulchella								
Gastrosaccus spinifer								
Gastrosaccus spp.								
Lanice conchilega				0,6960			0,6213	
Leucothoe incisa								
Liocarcinus cf. holsatus							14,4423	
Liocarcinus holsatus								
Macoma balthica								
Magelona filiformis	0,0082			0,0047				
Magelona johnstoni				0,0445				
Magelona mirabilis	0,0021	0,0031			0,0066			
Magelona spp.								
Malmgreniella darbouxi				0,0480				
Megaluropus agilis			0,0038					
Monopseudocuma gilsoni					0,0038			0,0038
Nemertea spp. A						0,0014	0,0451	0,0025
Nemertea spp. B		0,0139						
Nephtys caeca								
Nephtys cirrosa	0,1454	0,1885	0,1210	0,2070	0,0755	0,1807	0,1828	0,1934
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis			0,3235	0,0021				0,0086
Ophiura albida		0,6126		0,0445				
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								0,0101
Phyllodoce mucosa								
Pinnotheres pisum								

Annex 3: Box core data

Area Sample Species	QT 41	QT 42	QT 43	QT 44.0	QT 45	QT 46	QT 47	QT 48
Poecilochaetus serpens								
Pontocrates arcticus	0,0038			0,0038				0,0077
Processa modica								
Pseudocuma longicorne								
Scolelepis bonnieri								
Scoloplos armiger	0,0057	0,1520	0,1179	0,1383	0,0053	0,0123	0,0310	0,0053
Spio goniocephala								
Spiophanes bombyx								
Spisula spp.								
Spisula subtruncata								
Tellimya ferruginosa			0,0388					
Thia scutellata								0,0482
Tubularia indivisa								
Urothoe brevicornis	0,0038		0,0038					0,0038
Urothoe poseidonis								
Urothoe spp.								

Area	QCS							
Sample	QCS 1	QCS 2	QCS 3.0	QCS 4	QCS 5	QCS 6	QCS 7	QCS 8
Species								
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta		0,0026						
Aricidea spp.								
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	0,0038					0,0038	0,0038	
Bathyporeia guilliamsoniana	0,0038		0,0038					0,0038
Bathyporeia nana								
Bathyporeia spp.								
Branchiostoma lanceolatum								
Chaetozone setosa				0,0025				
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus								
Echinocardium cordatum						5,6071	3,2956	53,7307
Ensis directus		8,8867						
Eteone foliosa	0,0035		0,0070				0,0825	
Eteone longa				0,0021				
Eunereis longissima								
Euspira pulchella					0,1136		0,2073	
Gastrosaccus spinifer				0,0128				
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica	0,0030							
Magelona filiformis								
Magelona johnstoni		0,0429			0,0203			
Magelona mirabilis				0,0365				
Magelona spp.								
Malmgreniella darbouxi								
Megaluropus agilis	0,0038			0,0038		0,0038		
Monopseudocuma gilsoni								
Nemertea spp. A				0,0018				
Nemertea spp. B		0,0224		0,2866				
Nephtys caeca								
Nephtys cirrosa	0,2583	0,1744	0,5007	0,3467	0,0014	0,2012	0,2416	0,1442
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis	0,0014	0,1828	0,0109			0,0010	0,0094	
Ophiura albida								
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa								
Pinnotheres pisum								

Annex 3: Box core data

Area	QCS							
Sample	QCS 1	QCS 2	QCS 3.0	QCS 4	QCS 5	QCS 6	QCS 7	QCS 8
Species								
Poecilochaetus serpens								
Pontocrates arcticus			0,0038					
Processa modica								
Pseudocuma longicorne								
Scolelepis bonnieri				0,0230	0,0866	0,8964		
Scoloplos armiger	0,0084	0,0242	0,0183	0,0459	0,2371		0,1750	
Spio goniocephala		0,0033				0,0018		
Spiophanes bombyx								
Spisula spp.					0,0157			
Spisula subtruncata								
Tellimya ferruginosa								
Thia scutellata	0,3425		1,7282					
Tubularia indivisa								
Urothoe brevicornis								
Urothoe poseidonis								
Urothoe spp.								

Area Sample Species	QCS 9	QCS 10	QCS 11.0	QCS 12	QCS 13.0	QCS 14	QCS 15.0	QCS 16
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta								
Aricidea spp.	0,0026		0,0013	0,0013	0,0026			0,0026
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	0,0038			0,0038	0,0077	0,0038	0,0038	
Bathyporeia guilliamsoniana				0,0077				
Bathyporeia nana								
Bathyporeia spp.						0,0038		
Branchiostoma lanceolatum								
Chaetozone setosa					0,0037			
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus								
Echinocardium cordatum	5,3321	20,6007		14,5487	8,2599		20,5091	
Ensis directus	15,3977							
Eteone foliosa				0,0103	0,0129			
Eteone longa					0,0006			
Eunereis longissima								
Euspira pulchella					0,0885			
Gastrosaccus spinifer							0,0128	
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa		0,0038		0,0038				
Liocarcinus cf. holsatus								
Liocarcinus holsatus								
Macoma balthica							0,2316	0,5200
Magelona filiformis					0,0002			
Magelona johnstoni						0,0332		
Magelona mirabilis			0,0139			0,0195		0,1235
Magelona spp.		0,0010						
Malmgreniella darbouxi								
Megaluropus agilis				0,0038				
Monopseudocuma gilsoni								
Nemertea spp. A								
Nemertea spp. B								
Nephtys caeca								
Nephtys cirrosa	0,2043	0,1192	0,3132	0,4732	0,2158	0,5955	0,2677	0,0804
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis	0,0023	0,0010		0,0018	0,0010	0,0072	0,0012	
Ophiura albida								
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.								
Phyllodoce mucosa								
Pinnotheres pisum								

Annex 3: Box core data

Area Sample Species	QCS 9	QCS 10	QCS 11.0	QCS 12	QCS 13.0	QCS 14	QCS 15.0	QCS 16
Poecilochaetus serpens								
Pontocrates arcticus				0,0038				
Processa modica								
Pseudocuma longicorne	0,0038							
Scolelepis bonnieri	0,1508	0,0326						
Scoloplos armiger	0,0039	0,1592		0,0049	0,0554	0,0256	0,0254	
Spio goniocephala				0,0021				
Spiophanes bombyx						0,0189		
Spisula spp.	0,0071							
Spisula subtruncata								
Tellimya ferruginosa		0,0231						
Thia scutellata		0,8370			0,0810		0,0450	
Tubularia indivisa		0,0000						
Urothoe brevicornis								
Urothoe poseidonis								
Urothoe spp.								

Area Sample Species	QCS 17	QCS 18	QCS 19	QCS 20	QCS 21	QCS 22	QCS 23.0	QCS 24
Abludomelita obtusata								
Angulus fabula								
Aricidea minuta				0,0004				0,0018
Aricidea spp.			0,0066					
Asterias rubens								
Bathyporeia cf. elegans								
Bathyporeia cf. nana								
Bathyporeia elegans	0,0077						0,0038	0,0115
Bathyporeia guilliamsoniana	0,0038		0,0038	0,0038		0,0038	0,0038	
Bathyporeia nana								
Bathyporeia spp.								
Branchiostoma lanceolatum								
Chaetozone setosa				0,0037				
Chamelea striatula								
Diastylis cf. rugosa								
Donax vittatus								
Echinocardium cordatum		5,3321			5,3321	13,8380	5,3321	
Ensis directus			15,3977				15,3977	
Eteone foliosa								
Eteone longa				0,0018				
Eunereis longissima								
Euspira pulchella								
Gastrosaccus spinifer				0,0256				0,0128
Gastrosaccus spp.								
Lanice conchilega								
Leucothoe incisa								
Liocarcinus cf. holsatus								
Liocarcinus holsatus				14,6827				
Macoma balthica								
Magelona filiformis								
Magelona johnstoni		0,0170						
Magelona mirabilis			0,0416	0,0486	0,0082			0,1009
Magelona spp.						0,0332		
Malmgreniella darbouxi								
Megaluropus agilis			0,0038	0,0077				
Monopseudocuma gilsoni	0,0077		0,0038					
Nemertea spp. A				0,0187				
Nemertea spp. B					0,2451			
Nephtys caeca								
Nephtys cirrosa	0,2002	0,1945	0,1721	0,2681	0,0853	0,0870	0,2293	0,3335
Nephtys hombergii								
Nototropis falcatus								
Ophelia borealis	0,0014		0,0057	0,0039				
Ophiura albida								
Ophiura ophiura								
Perioculodes longimanus								
Pestarella tyrrhena								
Phoronis spp.			0,0008					
Phyllodoce mucosa								
Pinnotheres pisum								

Annex 3: Box core data

Area Sample Species	QCS 17	QCS 18	QCS 19	QCS 20	QCS 21	QCS 22	QCS 23.0	QCS 24
Poecilochaetus serpens								
Pontocrates arcticus								0,0038
Processa modica								
Pseudocuma longicorne								
Scolelepis bonnieri			0,1721			0,1157	0,0088	
Scoloplos armiger			0,0027	0,0039		0,0014	0,0230	
Spio goniocephala			0,0008	0,0037				
Spiophanes bombyx								
Spisula spp.								
Spisula subtruncata							0,0835	
Tellimya ferruginosa		0,0287						
Thia scutellata								
Tubularia indivisa								
Urothoe brevicornis	0,0038							0,0038
Urothoe poseidonis				0,0038				0,0038
Urothoe spp.								

Area		QAW					
Sample	QCS 25	QAW 1.0	QAW 2.0	QAW 3.0	QAW 4.0	QAW 5.0	QAW 6.0
Species							
Abludomelita obtusata							
Angulus fabula							
Aricidea minuta							
Aricidea spp.							
Asterias rubens							
Bathyporeia cf. elegans							
Bathyporeia cf. nana							0,0038
Bathyporeia elegans	0,0038	0,0231	0,0154	0,0077	0,0038	0,0115	0,0077
Bathyporeia guilliamsoniana	0,0038					0,0231	
Bathyporeia nana							
Bathyporeia spp.			0,0038				
Branchiostoma lanceolatum							
Chaetozone setosa			0,0103		0,0207		0,0008
Chamelea striatula							
Diastylis cf. rugosa							
Donax vittatus							
Echinocardium cordatum	1,1640			18,3102		5,5386	5,3321
Ensis directus			15,3977				5,6658
Eteone foliosa							
Eteone longa		0,0016	0,0014		0,0008	0,0119	
Eunereis longissima							
Euspira pulchella							
Gastrosaccus spinifer		0,0128					
Gastrosaccus spp.							
Lanice conchilega							
Leucothoe incisa							
Liocarcinus cf. holsatus							
Liocarcinus holsatus							
Macoma balthica		0,5616			0,0682		
Magelona filiformis			0,0131		0,0023	0,0131	
Magelona johnstoni				0,0082		0,0310	
Magelona mirabilis	0,0275				0,0806		
Magelona spp.							
Malmgreniella darbouxi							
Megaluropus agilis					0,0038		
Monopseudocuma gilsoni							0,0038
Nemertea spp. A		0,0363	0,0049		0,0111	0,0088	
Nemertea spp. B					0,0045		
Nephtys caeca							
Nephtys cirrosa	0,8523	0,2086	0,1723	0,2652	0,2948	0,2062	0,4267
Nephtys hombergii							
Nototropis falcatus							
Ophelia borealis	0,0008	0,1403	0,0014	0,0630	0,0012		
Ophiura albida							
Ophiura ophiura			2,7223				
Perioculodes longimanus							
Pestarella tyrrhena							
Phoronis spp.						0,0088	
Phyllodoce mucosa							
Pinnotheres pisum							

Annex 3: Box core data

Area Sample Species	QCS 25	QAW QAW 1.0	QAW 2.0	QAW 3.0	QAW 4.0	QAW 5.0	QAW 6.0
Poecilochaetus serpens						0,0821	
Pontocrates arcticus		0,0038			0,0038		
Processa modica							
Pseudocuma longicorne							
Scolelepis bonnieri							
Scoloplos armiger	0,2306	0,2314	0,0952	0,0090	0,1305	0,1906	0,3136
Spio goniocephala							
Spiophanes bombyx							
Spisula spp.							
Spisula subtruncata							
Tellimya ferruginosa				0,0307			0,0987
Thia scutellata							
Tubularia indivisa							
Urothoe brevicornis						0,0038	0,0115
Urothoe poseidonis							
Urothoe spp.							

Annex 4a: Benthic dredge density data (ind/100m²)

Area	QCN							
Sample	QCN 1	QCN 2	QCN 3	QCN 4	QCN 5	QCN 6	QCN 7	QCN 8
Species								
Ammodytes spp.						1	1	
Angulus fabula							108	64
Angulus tenuis				1				
Arnoglossus laterna	1							
Asterias rubens	11		2	1		2	4	7
Buglossidium luteum	3	2	2	2	1		5	2
Callionymus lyra								1
Callionymus reticulatus								
Chamelea spp.	2	5	12	4	1		2	2
Corystes cassivelaunus								
Crangon almanni								
Crangon crangon	7	1	2	2		1	3	5
Donax vittatus	17	30	23	16	3	1	51	61
Echiichthys vipera								
Echinocardium cordatum	2	50	10	62	18	8	28	37
Ensis directus								
Ensis ensis		2	1	2	2	1		1
Ensis spp.								
Eteone foliosa								
Eunereis longissima								2
Euspira pulchella	2	2	1	1			13	6
Gastrosaccus spinifer								
Gymnammodytes semisumatus						1		
Hyperoplus lanceolatus			2					
Hyperoplus spp.						1		
Lanice conchilega			2	1	1	1	2	1
Limanda limanda		1					1	1
Liocarcinus holsatus	1	3	3	5	3	1	1	3
Liocarcinus marmoreus								
Liocarcinus spp.								
Lutraria spp.								
Macropodia rostrata								
Nemertea spp. A				1				
Nemertea spp. B	1				1			1
Nemertea spp. C				1				
Nephtys assimilis								
Nephtys caeca						1		
Nephtys cirrosa		1	2		3	2		2
Nephtys hombergii		2			1			1
Nephtys spp.	1	2	9	9	12	7	9	2
Nereidae spp.							1	
Ophelia borealis			3	17	18	21		1
Ophiura albida	5	2	6	10	4	2	1	1
Ophiura ophiura	46	20	16	2	5	2	7	18
Ophiuridae spp.								

Annex 4: Dredge sample data

Area	QCN							
Sample	QCN 1	QCN 2	QCN 3	QCN 4	QCN 5	QCN 6	QCN 7	QCN 8
Species								
Paguridae spp.	1	1				1		
Pagurus bernhardus	5		2					1
Philocheras trispinosus	1			1	2	3		
Phyllodoce groenlandica								
Phyllodoce lineata								
Pinnotheres pisum								
Pleuronectes platessa	1						1	
Pomatoschistus spp.	22	3	2		3	2	5	5
Processa spp.		2		4				
Scolelepis bonnieri								
Scolelepis spp.				1				
Scoloplos armiger						2		
Sigalion mathildae							1	1
Solea solea								
Spio spp.						3		
Spisula spp.	9	18	19	14	11	15	1	4
Striarca lactea								
Taurulus bubalis								
Tellimya ferruginosa								
Thia scutellata		6		1	5	3	2	6

Area Sample Species	QCN 9	QT QT 1	QT 2	QT 3	QT 4	QT 5	QT 6	QT 7
Ammodytes spp.								
Angulus fabula								
Angulus tenuis								
Arnoglossus laterna								
Asterias rubens	3	2	3	3	5	3	1	1
Buglossidium luteum	4	2	3	4	1	5	6	1
Callionymus lyra								1
Callionymus reticulatus		1						
Chamelea spp.	2	2	3	2		6	4	1
Corystes cassivelaunus								
Crangon almanni							1	
Crangon crangon	1	4	3	11	6	1	2	10
Donax vittatus	70	5	5	3	3	3	4	10
Echiichthys vipera								4
Echinocardium cordatum	22	27	77	74	16	10	60	43
Ensis directus								1
Ensis ensis	2	2	2	2	1	1	3	
Ensis spp.						2		
Eteone foliosa								
Eunereis longissima	2	1				2		
Euspira pulchella	5	4		3	2	4		
Gastrosaccus spinifer								
Gymnammodytes semisumatus								
Hyperoplus lanceolatus		1		2	1	3		
Hyperoplus spp.								
Lanice conchilega	1	1		2	1			
Limanda limanda		1	1					
Liocarcinus holsatus	4	1		2	1	4		
Liocarcinus marmoreus								
Liocarcinus spp.								
Lutraria spp.								
Macropodia rostrata					1			
Nemertea spp. A					1			
Nemertea spp. B								
Nemertea spp. C								
Nephtys assimilis	2							
Nephtys caeca								
Nephtys cirrosa								
Nephtys hombergii								
Nephtys spp.	14	7	5	7	7	5	1	8
Nereidae spp.				1				
Ophelia borealis	1			1	1	9	2	2
Ophiura albida	2	31	10	18	14	31	8	12
Ophiura ophiura	34	58	27	37	34	35	14	10
Ophiuridae spp.		1						
Paguridae spp.	1					1		1
Pagurus bernhardus			1		1	2		1
Philocheras trispinosus	1						3	3
Phyllodoce groenlandica								

Annex 4: Dredge sample data

Area		QT						
Sample	QCN 9	QT 1	QT 2	QT 3	QT 4	QT 5	QT 6	QT 7
Species								
Phyllodoce lineata		1						
Pinnotheres pisum				2	1			
Pleuronectes platessa								
Pomatoschistus spp.	6	1	5	1		1		6
Processa spp.			1	1	1	1		
Scolelepis bonnieri								
Scolelepis spp.								
Scoloplos armiger		1						
Sigalion mathildae								
Solea solea				1				
Spio spp.								
Spisula spp.	11	43	3	12	22	6	9	7
Striarca lactea								
Taurulus bubalis								
Tellimya ferruginosa								
Thia scutellata	4	3	2	3	1		4	

Area Sample Species	QT 8	QT 9	QT 10	QT 11	QT 12	QT 13	QT 14	QT 15
Ammodytes spp.					1			1
Angulus fabula								
Angulus tenuis								
Arnoglossus laterna								
Asterias rubens	7	10			9	1	1	3
Buglossidium luteum	5	8		3	7	2	2	
Callionymus lyra				1		1		
Callionymus reticulatus		1		1				
Chamelea spp.	7	4	1	2	5	1	3	5
Corystes cassivelaunus	1	2						
Crangon almanni							1	
Crangon crangon	1	6	11	8	4	3	4	5
Donax vittatus	7	1	3	7	1	7	3	11
Echiichthys vipera								
Echinocardium cordatum	171	62	13	30	124	112	26	116
Ensis directus								
Ensis ensis	2	2	23	2		4	3	6
Ensis spp.								
Eteone foliosa				2			1	
Eunereis longissima					9	2		
Euspira pulchella	1	9		1	15	4	2	
Gastrosaccus spinifer					1			
Gymnammodytes semisumatus				1				
Hyperoplus lanceolatus	2		1	1	2		1	
Hyperoplus spp.								
Lanice conchilega					1		2	
Limanda limanda			1	2				1
Liocarcinus holsatus	1			2	1	2		
Liocarcinus marmoreus								
Liocarcinus spp.							1	
Lutraria spp.								
Macropodia rostrata								
Nemertea spp. A								
Nemertea spp. B	1							
Nemertea spp. C								
Nephtys assimilis								
Nephtys caeca								
Nephtys cirrosa	8			3		6		
Nephtys hombergii	1			1				
Nephtys spp.	3	3	14		14		9	9
Nereidae spp.		1			1			
Ophelia borealis			1	1	2	2	3	4
Ophiura albida	16	14	5	3	31	15	12	4
Ophiura ophiura	43	83	9	19	46	30	10	8
Ophiuridae spp.								
Paguridae spp.	1			1				
Pagurus bernhardus	2	2						
Philocheras trispinosus			2				2	1
Phyllodoce groenlandica			1					

Annex 4: Dredge sample data

Area Sample Species	QT 8	QT 9	QT 10	QT 11	QT 12	QT 13	QT 14	QT 15
Phyllodoce lineata								
Pinnotheres pisum								
Pleuronectes platessa			1				2	1
Pomatoschistus spp.	1	4	2		1		1	
Processa spp.		2			6			1
Scolelepis bonnieri							1	
Scolelepis spp.	1		1					
Scoloplos armiger	1	1						2
Sigalion mathildae								
Solea solea		1			1	1		
Spio spp.								
Spisula spp.	45	19	7	19	30	15	11	16
Striarca lactea								
Taurulus bubalis			1					
Tellimya ferruginosa	1							
Thia scutellata	3	3	6	2	5	6	1	8

Area	QCS							
Sample	QCS 1	QCS 2	QCS 3	QCS 4	QCS 5	QCS 6	QCS 7	QCS 8
Species								
Ammodytes spp.								
Angulus fabula							2	
Angulus tenuis								
Arnoglossus laterna		1	1		1			
Asterias rubens	1							1
Buglossidium luteum	9	8	6	4	3	2	14	5
Callionymus lyra							2	
Callionymus reticulatus	1	2			2		2	1
Chamelea spp.				1			2	
Corystes cassivelaunus				1				
Crangon almanni								
Crangon crangon	9	3	1	3		1		1
Donax vittatus		4		2		2		
Echiichthys vipera								
Echinocardium cordatum	90	42	26	20	28	9	182	31
Ensis directus								
Ensis ensis				5	1	1	12	
Ensis spp.								
Eteone foliosa								
Eunereis longissima								
Euspira pulchella	13			6	4	1	26	
Gastrosaccus spinifer	1							
Gymnammodytes semisumatus		1						
Hyperoplus lanceolatus	3	2			1	1		
Hyperoplus spp.								
Lanice conchilega							2	1
Limanda limanda		1				1		
Liocarcinus holsatus	5		1	1	2	1	8	1
Liocarcinus marmoreus								
Liocarcinus spp.								
Lutraria spp.								
Macropodia rostrata								
Nemertea spp. A								
Nemertea spp. B					1		8	4
Nemertea spp. C								
Nephtys assimilis								
Nephtys caeca			1		3	2		
Nephtys cirrosa		4	3		3	7	4	2
Nephtys hombergii								
Nephtys spp.	26	7	9	21	3	6	16	8
Nereidae spp.	1							
Ophelia borealis	13	30	22	5	2	25	42	21
Ophiura albida	17	1	1	8	6	3	10	4
Ophiura ophiura	5	2	1	7	5	2	14	6
Ophiuridae spp.		1						
Paguridae spp.				1				
Pagurus bernhardus					1			
Philocheras trispinosus	1	4		1		1		1
Phyllodoce groenlandica								

Annex 4: Dredge sample data

Area	QCS							
Sample	QCS 1	QCS 2	QCS 3	QCS 4	QCS 5	QCS 6	QCS 7	QCS 8
Species								
Phyllodoce lineata								
Pinnotheres pisum				1	1			
Pleuronectes platessa								
Pomatoschistus spp.		1		1	1			2
Processa spp.	4	1		2	2		6	2
Scolelepis bonnieri								
Scolelepis spp.				1				
Scoloplos armiger			1	1	3		2	1
Sigalion mathildae								
Solea solea								
Spio spp.		1	4					
Spisula spp.	19	21	16	37	32	20	14	18
Striarca lactea	1							
Taurulus bubalis								
Tellimya ferruginosa								
Thia scutellata	16	2	5	20	9	2	12	3

Area		QAW					
Sample	QCS 9	QAW 1	QAW 2	QAW 3	QAW 4	QAW 5	QAW 6
Species							
Ammodytes spp.					2		
Angulus fabula				2	1		
Angulus tenuis							
Arnoglossus laterna							
Asterias rubens		1	3	3		1	1
Buglossidium luteum	4	4	1	5	3	8	2
Callionymus lyra			1				
Callionymus reticulatus							
Chamelea spp.	2			9		18	
Corystes cassivelaunus			1				1
Crangon almanni							1
Crangon crangon	6	17	17	9	9	7	7
Donax vittatus		4	3	9	14	13	13
Echiichthys vipera		1					
Echinocardium cordatum	17	28	8	27	33	79	44
Ensis directus							
Ensis ensis	2			4	1	1	
Ensis spp.							
Eteone foliosa							
Eunereis longissima				3		3	
Euspira pulchella	2		1	1	4	2	
Gastrosaccus spinifer							
Gymnammodytes semisumatus							
Hyperoplus lanceolatus		1	1	1	2		1
Hyperoplus spp.							
Lanice conchilega							
Limanda limanda							
Liocarcinus holsatus				3		1	1
Liocarcinus marmoreus	1						
Liocarcinus spp.							
Lutraria spp.			1			1	
Macropodia rostrata							
Nemertea spp. A							
Nemertea spp. B						1	1
Nemertea spp. C	1						
Nephtys assimilis				1			
Nephtys caeca							
Nephtys cirrosa			2			6	2
Nephtys hombergii						1	
Nephtys spp.	21	12		6	6	9	3
Nereidae spp.							
Ophelia borealis	17	5	1	1	2	1	
Ophiura albida	10	25	60	51	55	36	35
Ophiura ophiura	6	41	56	38	49	35	48
Ophiuridae spp.		1	2	1	1		2
Paguridae spp.		2	3	2	3	2	1
Pagurus bernhardus				1			
Philocheras trispinosus	2	1	2	1	3	1	3
Phyllodoce groenlandica							

Annex 4: Dredge sample data

Area Sample Species	QCS 9	QAW QAW 1	QAW 2	QAW 3	QAW 4	QAW 5	QAW 6
Phyllodoce lineata							
Pinnotheres pisum			1				
Pleuronectes platessa	1			1			1
Pomatoschistus spp.		1	3	1	1		2
Processa spp.	6		1	2		3	3
Scolelepis bonnieri							
Scolelepis spp.		1					
Scoloplos armiger	1			1			
Sigalion mathildae							
Solea solea							
Spio spp.			1				
Spisula spp.	23	27	33	41	16	47	12
Striarca lactea							
Taurulus bubalis							
Tellimya ferruginosa							
Thia scutellata	10	4	1		4	2	6

Annex 4b: Benthic dredge biomass data (g AFDW/100m²)

Area Sample Species	QCN QCN 1	QCN 2	QCN 3	QCN 4	QCN 5	QCN 6	QCN 7	QCN 8
Ammodytes spp.						0,010	0,600	
Angulus fabula							12,545	6,727
Angulus tenuis				0,364				
Arnoglossus laterna	0,600							
Asterias rubens	27,900		4,712	4,464		9,424	18,848	18,600
Buglossidium luteum	2,600	2,000	1,800	5,200	1,600		5,000	2,200
Callionymus lyra								0,800
Callionymus reticulatus								
Chamelea spp.	0,124	4,182	10,909	2,727	1,636		0,727	0,909
Corystes cassivelaunus								
Crangon almanni								
Crangon crangon	0,788	0,121	0,061	0,242		0,121	0,242	0,364
Donax vittatus	7,455	10,909	9,636	5,455	1,273	0,364	15,091	20,000
Echiichthys vipera								
Echinocardium cordatum	2,940	72,485	13,580	70,910	17,745	6,965	35,000	46,410
Ensis directus								
Ensis ensis		1,455	1,091	1,455	2,182	1,455		1,273
Ensis spp.								
Eteone foliosa								
Eunereis longissima								0,020
Euspira pulchella	0,952	0,952	0,037	0,025			0,476	2,222
Gastrosaccus spinifer								
Gymnammodytes semisumatus						0,400		
Hyperoplus lanceolatus			1,600					
Hyperoplus spp.						0,010		
Lanice conchilega			0,020	0,010	0,010	0,010	0,020	0,010
Limanda limanda		5,200					0,200	0,400
Liocarcinus holsatus	0,010	2,606	0,909	2,000	1,394	0,364	0,303	1,758
Liocarcinus marmoreus								
Liocarcinus spp.								
Lutraria spp.								
Macropodia rostrata								
Nemertea spp. A				0,010				
Nemertea spp. B	0,010				0,010			0,010
Nemertea spp. C				0,010				
Nephtys assimilis								
Nephtys caeca						0,010		
Nephtys cirrosa		0,010	0,020		0,030	0,020		0,020
Nephtys hombergii		0,020			0,010			0,010
Nephtys spp.	0,010	0,020	0,090	0,090	0,120	0,070	0,090	0,020
Nereidae spp.							0,010	
Ophelia borealis			0,030	0,170	0,180	0,210		0,010
Ophiura albida	0,624	0,308	0,511	0,462	0,644	0,853	0,046	0,154
Ophiura ophiura	19,231	1,692	2,615	0,769	0,852	0,615	1,538	4,923
Ophiuridae spp.								

Annex 4: Dredge sample data

Area Sample Species	QCN QCN 1	QCN 2	QCN 3	QCN 4	QCN 5	QCN 6	QCN 7	QCN 8
Paguridae spp.	0,001	0,001				0,001		
Pagurus bernhardus	1,212		0,242					0,242
Philocheras trispinosus	0,028			0,053	0,079	0,122		
Phyllodoce groenlandica								
Phyllodoce lineata								
Pinnotheres pisum								
Pleuronectes platessa	2,600						36,000	
Pomatoschistus spp.	3,800	0,400	0,272		0,800	0,400	1,000	0,600
Processa spp.		0,001		0,001				
Scolelepis bonnieri								
Scolelepis spp.				0,010				
Scoloplos armiger						0,020		
Sigalion mathildae							0,010	0,010
Solea solea								
Spio spp.						0,030		
Spisula spp.	7,273	2,000	4,909	4,182	4,727	9,455	0,182	1,636
Striarca lactea								
Taurulus bubalis								
Tellimya ferruginosa								
Thia scutellata		0,545		0,063	0,303	0,364	0,061	0,727

Area Sample Species	QCN 9	QT QT 1	QT 2	QT 3	QT 4	QT 5	QT 6	QT 7
Ammodytes spp.								
Angulus fabula								
Angulus tenuis								
Arnoglossus laterna								
Asterias rubens	6,696	0,248	0,248	0,124	7,068	0,992	0,200	6,324
Buglossidium luteum	3,800	2,000	3,800	7,600	3,200	4,000	6,600	2,400
Callionymus lyra								2,000
Callionymus reticulatus		0,200						
Chamelea spp.	1,273	0,052	2,545	1,636		4,364	3,636	0,545
Corystes cassivelaunus								
Crangon almanni							0,061	
Crangon crangon	0,121	0,303	0,364	1,030	0,242	0,242	0,242	0,848
Donax vittatus	25,818	1,818	1,636	0,909	0,909	0,909	1,636	2,182
Echiichthys vipera								2,000
Echinocardium cordatum	27,755	24,955	97,195	78,085	16,520	9,520	77,245	54,705
Ensis directus								1,273
Ensis ensis	1,091	0,909	2,182	1,818	0,727	0,909	2,545	
Ensis spp.						7,273		
Eteone foliosa								
Eunereis longissima	0,020	0,010				0,020		
Euspira pulchella	2,063	0,193		0,193	0,041	0,102		
Gastrosaccus spinifer								
Gymnammodytes semisumatus								
Hyperoplus lanceolatus		4,400		7,800	0,001	2,600		
Hyperoplus spp.								
Lanice conchilega	0,010	0,010		0,020	0,010			
Limanda limanda		9,400	0,400					
Liocarcinus holsatus	2,000	0,364		2,182	0,424	2,303		
Liocarcinus marmoreus								
Liocarcinus spp.								
Lutraria spp.								
Macropodia rostrata					0,009			
Nemertea spp. A					0,010			
Nemertea spp. B								
Nemertea spp. C								
Nephtys assimilis	0,020							
Nephtys caeca								
Nephtys cirrosa								
Nephtys hombergii								
Nephtys spp.	0,140	0,070	0,050	0,070	0,070	0,050	0,010	0,080
Nereidae spp.				0,010				
Ophelia borealis	0,010			0,010	0,010	0,090	0,020	0,020
Ophiura albida	1,043	0,615	2,248	0,615	1,156	1,077	1,771	0,923
Ophiura ophiura	6,154	3,846	14,308	2,462	3,385	8,154	3,077	4,000
Ophiuridae spp.		0,073						
Paguridae spp.	0,001					0,001		0,001
Pagurus bernhardus			1,152			0,606		0,061
Philocheras trispinosus	0,036				0,059		0,131	0,115
Phyllodoce groenlandica								

Annex 4: Dredge sample data

Area		QT						
Sample	QCN 9	QT 1	QT 2	QT 3	QT 4	QT 5	QT 6	QT 7
Species								
Phyllodoce lineata		0,010						
Pinnotheres pisum				0,001	0,001			
Pleuronectes platessa								
Pomatoschistus spp.	1,200	0,200	0,400	0,400		0,086		0,800
Processa spp.			0,001	0,001	0,001	0,001		
Scolelepis bonnieri								
Scolelepis spp.								
Scoloplos armiger		0,010						
Sigalion mathildae								
Solea solea				25,800				
Spio spp.								
Spisula spp.	1,636	2,909	2,727	1,818	2,545	1,818	2,000	2,182
Striarca lactea								
Taurulus bubalis								
Tellimya ferruginosa								
Thia scutellata	0,242	0,121	0,117	0,121	0,063		0,121	

Area Sample Species	QT 8	QT 9	QT 10	QT 11	QT 12	QT 13	QT 14	QT 15
Ammodytes spp.					1,400			0,010
Angulus fabula								
Angulus tenuis								
Arnoglossus laterna								
Asterias rubens	2,728	3,720			1,488	0,200	0,200	4,340
Buglossidium luteum	8,000	10,000		2,800	7,600	3,400	2,400	
Callionymus lyra				0,600		0,400		
Callionymus reticulatus		0,200		0,200				
Chamelea spp.	4,909	1,455	0,909	2,364	2,727	1,455	2,727	5,636
Corystes cassivelaunus	0,667	1,394						
Crangon almanni							0,165	
Crangon crangon	0,061	0,424	1,091	0,848	0,061	0,485	0,606	0,424
Donax vittatus	2,364	0,364	1,818	3,455	0,182	2,364	1,273	5,636
Echiichthys vipera								
Echinocardium cordatum	188,930	75,740	16,555	38,500	120,505	156,485	29,155	93,555
Ensis directus								
Ensis ensis	0,727	1,273	10,182	1,636		2,727	5,818	4,364
Ensis spp.								
Eteone foliosa				0,020			0,010	
Eunereis longissima					0,090	0,020		
Euspira pulchella	0,025	0,202		0,025	0,411	0,102	0,052	
Gastrosaccus spinifer					0,001			
Gymnammodytes semisumatus				0,400				
Hyperoplus lanceolatus	0,010		3,200	0,274	3,400		0,010	
Hyperoplus spp.								
Lanice conchilega					0,010		0,020	
Limanda limanda			0,010	8,200				0,010
Liocarcinus holsatus	0,606			0,848	0,424	1,394		
Liocarcinus marmoreus								
Liocarcinus spp.							0,036	
Lutraria spp.								
Macropodia rostrata								
Nemertea spp. A								
Nemertea spp. B	0,010							
Nemertea spp. C								
Nephtys assimilis								
Nephtys caeca								
Nephtys cirrosa	0,080			0,030		0,060		
Nephtys hombergii	0,010			0,010				
Nephtys spp.	0,030	0,030	0,140		0,140		0,090	0,090
Nereidae spp.		0,010			0,010			
Ophelia borealis			0,010	0,010	0,020	0,020	0,030	0,040
Ophiura albida	0,462	0,923	0,768	0,165	1,538	0,873	0,462	0,383
Ophiura ophiura	2,615	7,077	2,615	3,538	2,154	2,923	1,692	2,615
Ophiuridae spp.								
Paguridae spp.	0,001			0,001				
Pagurus bernhardus	1,091	1,939						
Philocheras trispinosus			0,083				0,100	0,059
Phyllodoce groenlandica			0,010					

Annex 4: Dredge sample data

Area Sample Species	QT 8	QT 9	QT 10	QT 11	QT 12	QT 13	QT 14	QT 15
Phyllodoce lineata								
Pinnotheres pisum								
Pleuronectes platessa			5,800				8,000	15,600
Pomatoschistus spp.	0,204	1,600	0,800		0,136		0,400	
Processa spp.		0,001			0,001			0,001
Scolelepis bonnieri							0,010	
Scolelepis spp.	0,010		0,010					
Scoloplos armiger	0,010	0,010						0,020
Sigalion mathildae								
Solea solea		16,400			18,200	23,000		
Spio spp.								
Spisula spp.	5,273	1,273	3,091	4,727	1,273	2,364	4,000	6,909
Striarca lactea								
Taurulus bubalis			4,000					
Tellimya ferruginosa	0,003							
Thia scutellata	0,182	0,182	0,242	0,063	0,121	0,364	0,049	0,303

Area	QCS							
Sample	QCS 1	QCS 2	QCS 3	QCS 4	QCS 5	QCS 6	QCS 7	QCS 8
Species								
Ammodytes spp.								
Angulus fabula							0,094	
Angulus tenuis								
Arnoglossus laterna		3,600	2,600		0,204			
Asterias rubens	4,836							10,540
Buglossidium luteum	15,200	11,200	9,200	4,000	3,000	2,800	13,200	7,600
Callionymus lyra							2,800	
Callionymus reticulatus	0,200	0,600			0,200		0,400	0,800
Chamelea spp.				0,182			1,091	
Corystes cassivelaunus				0,364				
Crangon almanni								
Crangon crangon	0,970	0,182	0,222	0,303		0,242		0,192
Donax vittatus		1,818		0,909		0,909		
Echiichthys vipera								
Echinocardium cordatum	89,320	43,155	30,555	28,700	29,050	8,400	193,620	26,495
Ensis directus								
Ensis ensis				5,818	1,455	1,273	1,818	
Ensis spp.								
Eteone foliosa								
Eunereis longissima								
Euspira pulchella	0,305			0,161	0,090	0,025	0,710	
Gastrosaccus spinifer	0,001							
Gymnammodytes semisumatus		0,200						
Hyperoplus lanceolatus	9,400	0,212			4,200	3,600		
Hyperoplus spp.								
Lanice conchilega							0,010	0,010
Limanda limanda		4,000				0,800		
Liocarcinus holsatus	2,303		0,303	0,909	0,909	0,606	3,394	0,364
Liocarcinus marmoreus								
Liocarcinus spp.								
Lutraria spp.								
Macropodia rostrata								
Nemertea spp. A								
Nemertea spp. B					0,010		0,040	0,040
Nemertea spp. C								
Nephtys assimilis								
Nephtys caeca			0,010		0,030	0,020		
Nephtys cirrosa		0,040	0,030		0,030	0,070	0,020	0,020
Nephtys hombergii								
Nephtys spp.	0,260	0,070	0,090	0,210	0,030	0,060	0,080	0,080
Nereidae spp.	0,010							
Ophelia borealis	0,130	0,300	0,220	0,050	0,020	0,250	0,210	0,210
Ophiura albida	0,923	0,154	0,073	0,462	0,308	0,308	0,923	0,615
Ophiura ophiura	2,615	1,231	0,923	3,077	2,308	1,077	12,615	4,462
Ophiuridae spp.		0,073						
Paguridae spp.				0,001				
Pagurus bernhardus					0,545			
Philocheras trispinosus	0,047	0,185		0,036		0,020		0,066
Phyllodoce groenlandica								

Annex 4: Dredge sample data

Area Sample Species	QCS QCS 1	QCS 2	QCS 3	QCS 4	QCS 5	QCS 6	QCS 7	QCS 8
Phyllodoce lineata								
Pinnotheres pisum				0,001	0,001			
Pleuronectes platessa								
Pomatoschistus spp.		0,200		0,204	0,136			0,200
Processa spp.	0,001	0,001		0,001	0,001		0,001	0,001
Scolelepis bonnieri								
Scolelepis spp.				0,010				
Scoloplos armiger			0,010	0,010	0,030		0,010	0,010
Sigalion mathildae								
Solea solea								
Spio spp.		0,010	0,040					
Spisula spp.	4,000	13,636	6,000	7,818	5,273	12,545	5,818	5,273
Striarca lactea	0,040							
Taurulus bubalis								
Tellimya ferruginosa								
Thia scutellata	0,606	0,242	0,242	1,212	0,303	0,121	0,727	0,242

Area		QAW					
Sample	QCS 9	QAW 1	QAW 2	QAW 3	QAW 4	QAW 5	QAW 6
Species							
Ammodytes spp.					1,400		
Angulus fabula				0,062	0,101		
Angulus tenuis							
Arnoglossus laterna							
Asterias rubens		0,200	0,248	1,860		0,200	0,200
Buglossidium luteum	2,600	3,600	1,200	6,400	2,600	9,400	1,000
Callionymus lyra			7,600				
Callionymus reticulatus							
Chamelea spp.	0,020			1,636		1,455	
Corystes cassivelaunus			0,606				0,606
Crangon almanni							0,206
Crangon crangon	0,303	1,636	1,576	0,727	1,030	0,485	0,606
Donax vittatus		2,545	1,273	3,455	6,545	3,636	6,545
Echiichthys vipera		0,086					
Echinocardium cordatum	19,145	31,885	9,240	31,640	34,930	87,710	54,845
Ensis directus							
Ensis ensis	2,000			2,182	0,545	0,364	
Ensis spp.							
Eteone foliosa							
Eunereis longissima				0,030		0,030	
Euspira pulchella	0,032		0,025	0,025	0,100	0,050	
Gastrosaccus spinifer							
Gymnammodytes semisumatus							
Hyperoplus lanceolatus		3,400	0,200	0,400	0,200		0,010
Hyperoplus spp.							
Lanice conchilega							
Limanda limanda							
Liocarcinus holsatus				2,061		0,788	0,545
Liocarcinus marmoreus	0,606						
Liocarcinus spp.							
Lutraria spp.			0,010			0,010	
Macropodia rostrata							
Nemertea spp. A							
Nemertea spp. B						0,010	0,010
Nemertea spp. C	0,010						
Nephtys assimilis				0,010			
Nephtys caeca							
Nephtys cirrosa			0,020			0,060	0,020
Nephtys hombergii						0,010	
Nephtys spp.	0,210	0,120		0,060	0,060	0,090	0,030
Nereidae spp.							
Ophelia borealis	0,170	0,050	0,010	0,010	0,020	0,010	
Ophiura albida	1,231	1,846	4,000	2,769	2,308	3,538	1,385
Ophiura ophiura	3,538	13,077	5,538	7,385	5,077	12,615	6,154
Ophiuridae spp.		0,046	0,119	0,046	0,046		0,146
Paguridae spp.		0,002	0,003	0,002	0,003	0,002	0,001
Pagurus bernhardus				0,143			
Philocheras trispinosus	0,051	0,032	0,078	0,036	0,120	0,047	0,136
Phyllodoce groenlandica							

Annex 4: Dredge sample data

Area Sample Species	QCS 9	QAW QAW 1	QAW 2	QAW 3	QAW 4	QAW 5	QAW 6
Phyllodoce lineata							
Pinnotheres pisum			0,001				
Pleuronectes platessa	34,000			10,000			3,400
Pomatoschistus spp.		0,086	0,600	0,086	0,136		0,200
Processa spp.	0,001		0,001	0,001		0,001	0,001
Scolelepis bonnieri							
Scolelepis spp.		0,010					
Scoloplos armiger	0,010			0,010			
Sigalion mathildae							
Solea solea							
Spio spp.			0,010				
Spisula spp.	7,091	7,818	5,273	5,273	2,182	6,364	5,273
Striarca lactea							
Taurulus bubalis							
Tellimya ferruginosa							
Thia scutellata	0,545	0,121	0,028		0,182	0,077	0,061

Annex 5: Physical variables

Sample	Median particle size (µm)	Clay (%)	Sand (%)	Organic matter (%)
QCN 1	278,916	5,325	94,675	0,8463
QCN 2	329,572	0	100	0,5008
QCN 3.0	247,885	0	100	0,4983
QCN 4	246,031	4,824	95,176	0,4892
QCN 5	231,152	5,501	94,499	0,5030
QCN 6	296,385	0	100	0,4362
QCN 7	254,28	0	100	0,5075
QCN 8	251,575	0	100	0,5517
QCN 9	238,465	4,744	95,256	0,6510
QCN 10	231,559	5,399	94,601	0,8660
QCN 11 .0	297,264	0	100	0,6462
QCN 12	261,22	1,233	98,767	0,7360
QCN 13.0	255,157	0	100	0,4896
QCN 13.4	266,077	4,187	95,813	0,4862
QCN 14	242,843	4,592	95,408	0,5278
QCN 15.0	237,937	0	100	0,5841
QCN 16	364,789	0,685	99,315	0,5677
QCN 17	247,676	0	100	0,5898
QCN 18	269,246	0	100	0,6258
QCN 19	240,135	0	100	0,2773
QCN 20	237,764	0	100	0,4818
QCN 21	267,293	0	100	0,5473
QCN 22	277,418	0	100	0,6332
QCN 23.0	276,598	0	100	0,4253
QCN 24	235,316	0	100	0,3306
QCN 25	246,502	0	100	1,0046
QT 1	295,089	0	100	0,4423
QT 2.0	293,44	1,862	98,138	0,5156
QT 3	291,718	0	100	0,4701
QT 4	291,354	0	100	0,4413
QT 5	276,275	0	100	0,3988
QT 6.0	270,426	0	100	0,4176
QT 6.2	284,845	0	100	0,4084
QT 7	262,408	0	100	0,4736
QT 8	565,248	0	200	1,0295
QT 10.0	243,709	0	100	0,5215
QT 11	252,101	0	100	0,5715
QT 12	235,769	0	100	0,5142
QT 13	260,115	0	100	0,4996
QT 14	286,254	0	100	0,4898
QT 15	251,883	0	100	0,4974
QT 16	249,551	0	100	0,5122
QT 18.0	264,103	0	100	0,5751
QT 19	272,694	0	100	0,4642
QT 20	255,493	0	100	0,5622

Annex 5: Physical variables

Sample	Median particle size (µm)	Clay (%)	Sand (%)	Organic matter (%)
QT 21.0	246,346	0	100	0,5131
QT 22	270,658	0	100	0,4905
QT 23	278,979	0	100	0,5474
QT 24	277,694	0	100	0,5632
QT 25	270,995	0	100	0,7320
QT 26	275,498	0	100	0,6535
QT 27	286,873	0	100	0,5538
QT 28	282,203	0	100	0,4878
QT 29	284,243	0	100	0,5058
QT 30	283,8	0	100	0,5104
QT 31	314,711	0	100	0,5812
QT 32	295,293	0	100	0,5148
QT 33.0	294,817	0	100	0,5315
QT 34	283,53	0	100	0,4618
QT 35	285,693	0	100	0,5362
QT 36	270,324	0	100	0,5042
QT 37	291,775	0	100	0,4830
QT 38	290,063	0	100	0,4759
QT 39	258,86	4,86	95,14	0,4481
QT 40.0	282,403	0	100	0,4911
QT 41	285,097	0	100	0,4500
QT 42	302,284	0	100	0,5474
QT 43	288,934	0	100	0,5285
QT 44.0	292,669	0	100	0,4308
QT 46	296,755	0	100	0,4112
QT 47	272,967	0	100	0,4042
QT 48	274,637	7,93	92,07	0,4910
QCS 1	300,96	0	100	0,4785
QCS 2	318,4	0	100	0,4110
QCS 3.0	298,123	0	100	0,8074
QCS 4	315,406	0	100	0,4587
QCS 5	331,135	0	100	0,5082
QCS 6	519,987	0	200	0,9372
QCS 7	211,984	0	100	0,7396
QCS 7	295,94	0	100	0,5348
QCS 8	302,258	1,435	98,565	0,4715
QCS 9	301,745	0	100	0,4236
QCS 10	284,073	0	100	0,4699
QCS 11 .0	310,567	0	100	0,4287
QCS 12	301,822	0	100	0,4117
QCS 13 .0	276,168	1,311	98,689	0,4136
QCS 14	298,439	0	100	0,4307
QCS 15.0	301,763	0	100	0,4749
QCS 15.1	294,431	0	100	0,5895
QCS 16	345,725	0	100	0,9457
QCS 17	311,113	0	100	0,4586
QCS 18	325,551	0	100	0,5032
QCS 19	317,086	0	100	0,3385
QCS 20	322,99	1,62	98,38	0,4266
QCS 21	327,466	0	100	0,3733
QCS 22	305,646	0	100	0,3553
QCS 23.0	305,226	0	100	0,4632
QCS 24	311,84	0	100	0,4116
QCS 25	336,115	0	100	0,4431

Sample	Median particle size (µm)	Clay (%)	Sand (%)	Organic matter (%)
QAW 1 .0	287,68	0	100	0,7909
QAW 2 .0	276,745	0	100	0,4711
QAW 3 .0	283,44	0	100	0,4391
QAW 4 .0	278,165	0	100	0,5133
QAW 4 .1	280,085	0	100	0,9185
QAW 5 .0	270,419	0	100	0,5068
QAW 6 .0	272,934	0	100	0,4926