

*A  
Survey  
Of  
Intertidal Mudflats and Sandflats  
In Ireland*

*2006*



**On behalf of  
the  
National Parks  
and  
Wildlife Service  
Dublin, Ireland**



*A Survey of  
Intertidal Sandflats and Mudflats  
in Ireland*

**Report on behalf of  
the National Parks and Wildlife Service  
(NPWS)**



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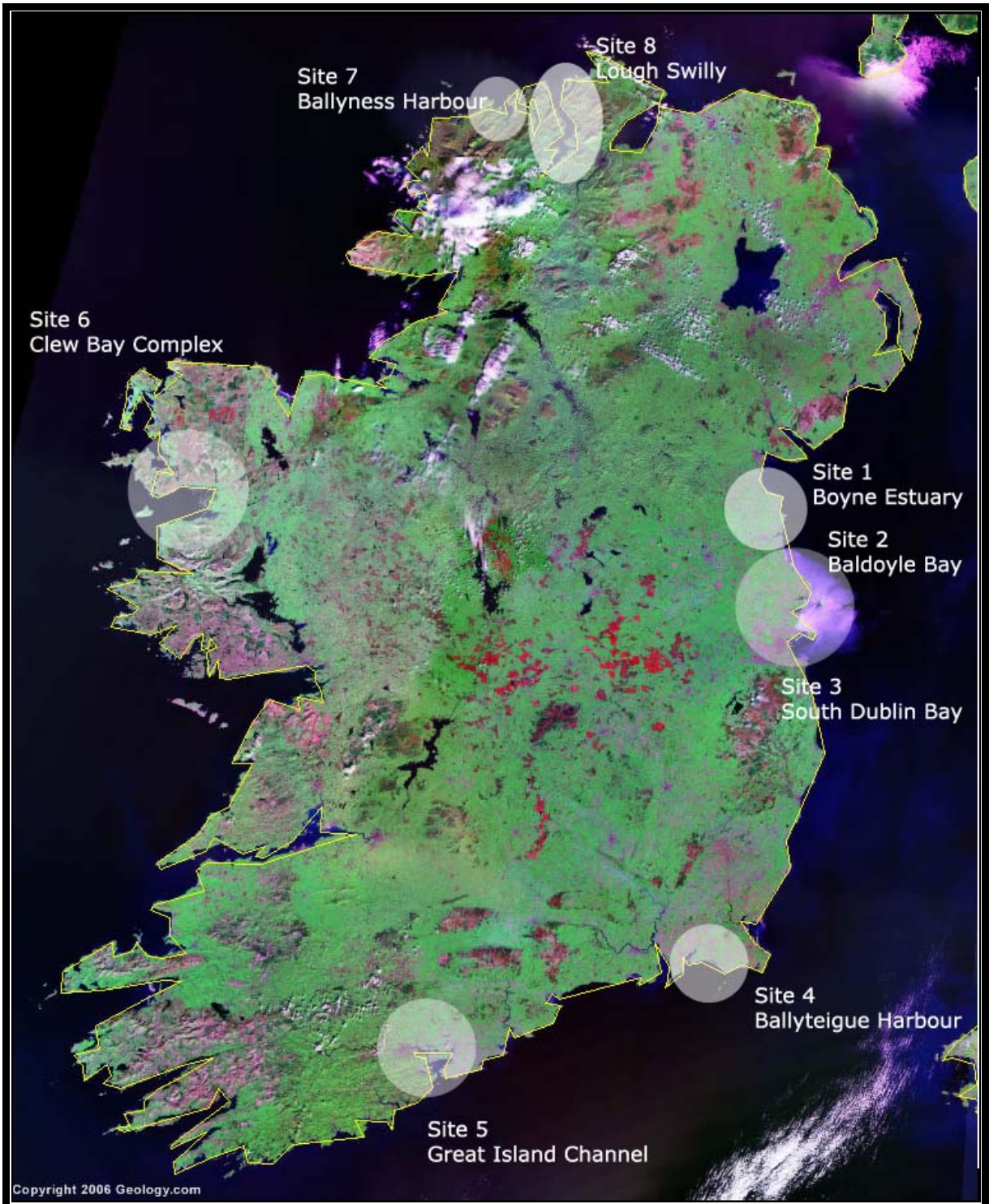
# 1. Introduction

## 1.1 Background

Aqua-Fact International Services Ltd was contracted by National Parks and Wildlife (NPW) to carry out a survey of selected shores in the following 8 candidate Special Areas of Conservation (cSAC):

- Boyne Coast and Estuary (site code 1957)
- Baldoyle Bay (site code 199)
- South Dublin Bay (site code 210)
- Ballyteigue Burrow (site code 696)
- Great Island Channel (site code 1058)
- Clew Bay Complex (site code 1482)
- Ballyness Bay (site code 1090)
- Lough Swilly (site code 2287)





**Figure 1.1.** Satellite map showing the location of the 8 sites around the Irish coast where the intertidal surveys took place during the summer of 2006.

(Source: <http://www.Geology.com>).

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The aims of the projects were to:

- Collect sediment samples at 8 locations around the Irish coast for biological and granulometric analyses
- Record field data for each sampling location including latitude and longitude, sediment characteristics e.g. qualitative description, colour, surface texture, depth of redox and biological features
- Make a photographic record of each sampling site
- Carry out biological analyses of four samples per station to quantitatively document species present
- Prepare a set of voucher specimens of all taxa recorded to be housed in the National Museum of Ireland
- Prepare a per sample species list
- Carry out particle size analysis of one sample per station
- Carry out organic carbon analysis of one sample per station
- Prepare a report containing all results in paper and electronic form

This was done to facilitate NPW in fulfilling its statutory monitoring requirements in relation to the EU Habitats Directive.

The work was carried out during from June to October 2006.

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## 2. Materials and methods

### 2.1 Locations

Table 2.1 below lists the site where the surveys were undertaken. The table also lists the NPW site code and the number of transects done at each site. 4 stations on each transect, namely the strand line, high shore, mid shore and low shore were sampled. The location and number of transects was agreed with NPW personnel prior to sampling. A Trimble 300D DGPS (ca 30cm accuracy) was used to accurately geo-reference the transects and stations.

	Site	Site code	Habitat	No. of transects
1	Boyne coast and estuary, Co. Louth and Co. Meath	1957	Mudflats Estuary	2
2	Baldoyle Bay, Co. Dublin	199	Mudflats	3
3	South Dublin Bay, Co. Dublin	210	Mudflats	2
4	Ballyteigue Burrow, Co. Dublin	696	Mudflats Estuary	2
5	Great Island Channel, Co. Cork	1058	Mudflats	3
6	Clew Bay Complex, Co. Mayo	1482	Inlet and Bay Mudflats	4
7	Ballyness Bay, Co. Donegal	1090	Mudflats Estuary	3
8	Lough Swilly, Co. Donegal	2287	Estuary	5

**Table 2.1** cSAC sites and transect numbers around the Irish coast.

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## 2.2 Sampling technique

All stations for each transect were sampled on the same day and survey work was not undertaken where low water tidal height exceeded 0.7m. A theodolite (LevelMark 75055) and staff were used to calculate vertical intervals of approximately 10% of the mean range of spring tide. Abbreviations referred to in the text will include MHWS i.e. mean high water springs etc. Horizontal distances were measured using a surveyor's tape. An inflatable boat fitted with a geo-referenced acoustic bathymetry plot substituted the shore levels taken using the surveyor's level and staff if the site was inaccessible by foot. This method provided a detailed plot of the slope characteristics of the shore on each transect. The nomenclature of Lewis (1964) was followed in referring to the vertical zones of the shore (see Table 2.2).

Tidal Level	Abbreviation
Extreme high water of the spring tides	EHWS
Mean high water of the spring tides	MHWS
Mean high water of the neap tides	MHWN
Extreme high water of the neap tides	E(L)HWN
Extreme low water of the neap tides	E(H)LWN
Mean low water of the neap tides	MLWN
Mean low water of the spring tides	MLWS
Extreme low water of the spring tides	ELWS

**Table 2.2** Recognised tidal level nomenclature and abbreviations used in the text (*After Lewis, 1964*)

Talitrid amphipods were collected from the upper shore line.

Core samples were taken at high, mid and low shore levels for infaunal species identification and enumeration. Four replicate cylindrical cores 15cm in diameter and 30cm in depth were taken at each of the 3 stations comprising a total sampled area of 0.1m<sup>2</sup>. A 0.25m<sup>2</sup> quadrat was used to randomly select the location of the core sampling area in each station. An area of 1m<sup>2</sup> was dug over with a fork to sample the larger and more widely dispersed species and larger macrofauna. When a site was inaccessible by foot due to the soft consistence and depth of the muds the samples were collected from an inflatable boat using a small Van Veen grab (0.025 m<sup>2</sup> sampling area). All samples were sieved using a

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1mm mesh sieve. All samples were labelled with the project code, date, station location and number and preserved using 10% buffered saline formalin solution with eosin red dye and returned to Aqua-Fact's laboratory for processing.

Sediment samples were taken at each of the 4 stations for particle size analysis and organic carbon content by using a small core. When the site was inaccessible by foot the samples were collected from an inflatable boat using a small Van Veen grab (0.025 m<sup>2</sup> sampling area).

Photographs were taken to record the position of transects and any fixed and conspicuous landmarks which would aid future relocation while each of the 4 stations was marked using DGPS. When an inflatable boat was used to access the site each transect was geo-referenced by the DGPS (integral to the boat's bathymetry surveying system). GPS fixes were also taken for each individual station for each transect. The physical features of the intertidal were described and photographed in detail. General physical features which were recorded include:

surface relief (even-uneven)

firmness (firm-soft)

stability (stable-mobile)

sorting (well-poor)

black layer (1 = not visible., 2 = >20cm, 3 = 5-20cm, 4 = 1-5cm, 5 = <1cm)

Station specific physical features which were recorded included:

mounds/casts

burrows/holes

tubes

algal mat

waves/dunes (>10cm high)

ripples (<10cm high)

drainage channels/creeks

standing water

subsurface coarse layer

subsurface clay/mud

surface silt/flocculent

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Aqua-Fact also generated relocation sheets for each transect undertaken. These include detailed site positions (GPS, bearing, site notes etc), annotated maps and site photographs and overview photographs of transects.

## 2.3 Sample processing

### 2.3.1 Faunal samples

On return to the Aqua-Fact lab, the samples were washed in a sieve of the same mesh size as used in the field and then backwashed into a sorting tray. Samples were systematically picked through by hand under a light using a forceps. Fauna was separated into labelled jars according to phyla, for example, Mollusca, Crustacea, Polychaeta etc. and preserved in 70% alcohol.

These sorted samples were analysed by Aqua-Fact's expert taxonomic team as shown in Table 2.3 below and identified to species level where possible using the appropriate taxonomic keys. A reference collection of identified material was prepared for the National Museum of Ireland. Faunal data for each sampling station are presented in Chapter 3 as number of taxa per 0.1 m<sup>2</sup> (Cores), observed fauna from the dug over area (Dig) and faunal abundances from the direct observations. The MNCR SACFOR abundance scale (JNCC website, <http://www.jncc.gov.uk/page-2684>) was used to record the abundances of the fauna observed on the sediment surface and from the 1m<sup>2</sup> dug up area at each sampling station. The abundance score given to each taxon is based on the size and the density at which it occurs. Therefore large size species observed occurring at low densities can be given the same rating as smaller species occurring at higher densities. Appendix I contain the records of all taxa recorded both in each of the cores and in the dug over areas.

Assigned taxonomist	Invertebrate fauna
Jose M Farinas-Franco, B.Sc. Hons	Polychaeta, Amphipoda, other Crustacea
Caroline Roche, Ph.D.	Polychaeta, Amphipoda, other Crustacea
Brendan O'Connor, Ph.D.	Polychaeta and other Phylla
Mark Costelloe, Ph. D.	Mollusca
David McGrath, Ph.D.	Amphipoda

**Table 2.3** Aqua-Fact expert taxonomic team.

### 2.3.2 Sediment samples

#### 2.3.2.1 Particle size analysis

Both traditional and laser particle sizing granulometric techniques were used to determine sediment particle size. The method to be employed depended on grain size fractions found at the stations.

Laser particle size analysis was used where the sediment particle sizes are generally less than 1mm in diameter. Where larger pebbles and stones dominate traditional sieving techniques were employed. Traditional analysis involves the dry sieving of approximately a minimum of 200g of sediment using a series of Wentworth graded sieves. The process involves the separation of the sediment fractions by passing them through a series of sieves. Each sieve retains a fraction of the sediment, which is later weighed and a percentage of the total calculated. Table 2.4 shows the classification of sediment particle size ranges into size classes.

Laser particle size analysis is carried out on ca. 10g of sediment using a computer-linked Malvern Mastersizer X laser particle analyser. The Mastersizer is a compact laser particle diffraction analyser designed to measure particles in suspension. A laser beam is diffracted by particles onto a high precision light-sensitive screen. The screen is scored with concentric rings of increasing radius, each ring corresponding to a predetermined angle of diffracted light. Light is scattered through different angles by particles of different size. The scattered light is collected by a Fourier optical system and brought to focus on a diode array detector element. A signal is produced from each detector element, which is proportional to



the intensity of incident light, and this is then amplified, digitised and transferred to an inbuilt computer. Specialised software produces a complete and detailed appreciation of particle size distribution. The Mastersizer has a range of 0.1 to 2000  $\mu\text{m}$ , enabling it to capture particle sizes much smaller than the traditional method; however it does not have the ability to measure particle sizes greater than 2000  $\mu\text{m}$  (gravel).

Range of particle size	Classification	Phi Unit
<63 $\mu\text{m}$	Silt/Clay	>4 $\emptyset$
63-125 $\mu\text{m}$	Very Fine Sand	4 $\emptyset$ , 3.5 $\emptyset$
125-250 $\mu\text{m}$	Fine Sand	3 $\emptyset$ , 2.5 $\emptyset$
250-500 $\mu\text{m}$	Medium Sand	2 $\emptyset$ , 1.5 $\emptyset$
500-1000 $\mu\text{m}$	Coarse Sand	1, 0.5 $\emptyset$
1000-2000 $\mu\text{m}$	Very Coarse Sand	0 $\emptyset$ , -0.5 $\emptyset$
>2000 $\mu\text{m}$	Gravel	-1 $\emptyset$ , -1.5 $\emptyset$ , -2 $\emptyset$ , -3 $\emptyset$ , -4 $\emptyset$

**Table 1.4.** The classification of sediment particle size ranges into size classes (adapted from Buchanan, 1984).

#### 2.3.2.1 Organic Carbon

Organic carbon analysis was carried out using the loss on ignition method. This process involved oven-drying the samples at 60°C for 36 hours. Following this, the samples are placed in a furnace at 550°C for 4 hours. Each sample and its crucible are weighed on an electronic scale before and after combustion. This allows the determination of percentage loss on ignition i.e. loss of organic material.

#### 2.4. Deliverables

As part of the contract, Aqua-Fact was to provide NPW with the following results:

- PC Excel spreadsheets containing the results for each replicate sample for each station for all 23 transects in taxonomic order



- 
- Results of particle size analysis for each station
  - Organic carbon content for each station
  - A reference collection of each of the species identified
  - 3 hard copies of the report including methodology, relocation sheets, transect descriptions, photographs, species lists for each sampling technique and
  - An electronic copy of the results and report

### 3. Results

#### 3.1 Boyne coast and estuary, Co. Louth and Co. Meath.



Figure 3.1.1. Map showing location of the transects surveyed in Site No.1 Boyne coast and estuary, Co. Louth and Co. Meath.

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## Site No.1 Boyne Coast and Estuary

### Transect 1

Location: Baltray Strand, Co. Louth

Date: 06.09.06

Starting point: 53° 43.86' N, 06° 14.96' W

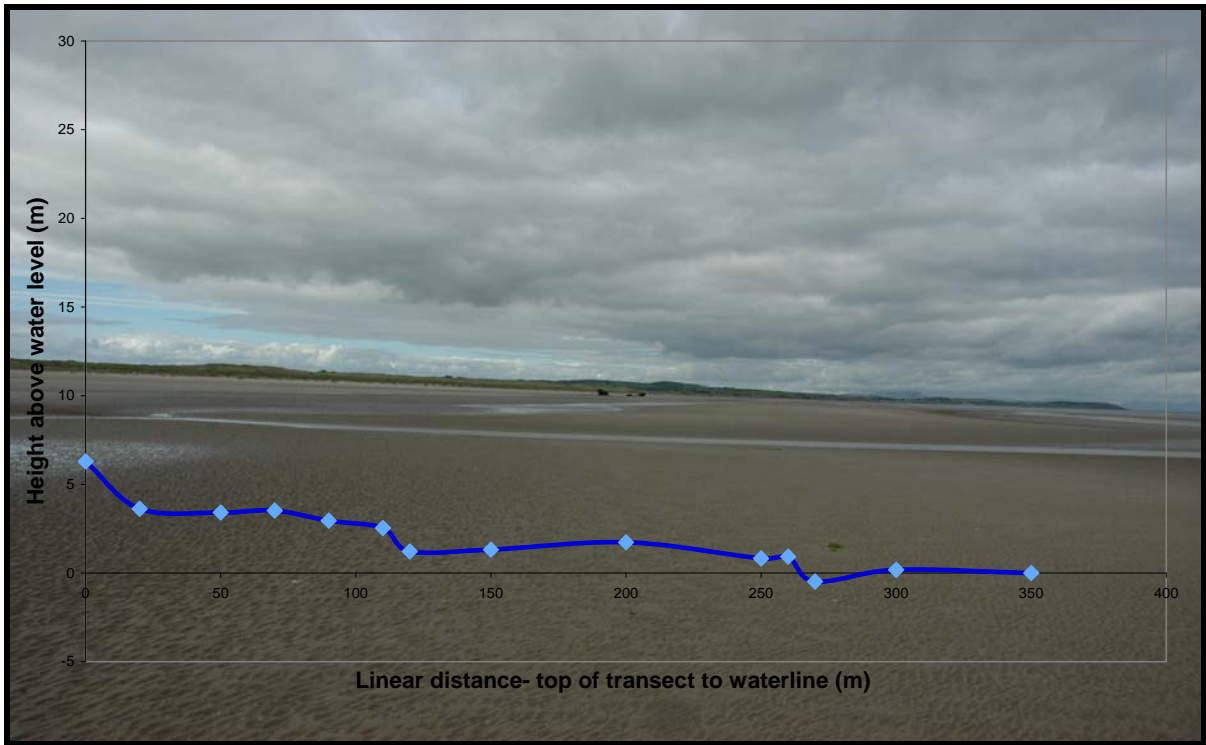
Exposure: exposed.

Sediment grain size and organic carbon content:

<b>Transect 1.</b>	<b>Station 1</b>	<b>Station 2</b>	<b>Station 3</b>
<b>Baltray, Co. Louth</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	0.61	5.93	0
Coarse sand	1.57	1.45	0
Medium sand	10	3.82	5.12
Fine sand	81.36	80.6	83.53
Very fine sand	6.45	6.68	11.35
Silt	0.01	1.52	0
Total Organic Carbon (C%)	0.09	0.12	0.09

### Site description:

The area surveyed was located to the south-west of Baltray village, on the north side of the Boyne Estuary in County Louth. The site consisted of extensive exposed sandy beaches running parallel to the coast, backed to the west by a system of sand dunes and sheltered to the south by the training wall at the mouth of the River Boyne. The substrate on the upper shore consisted of very fine sand colonised by grasses that gave way to a band of ca. 2m of sand, pebbles and empty shells. Talitrid amphipods were recorded and collected from numerous burrows along the high water mark and also underneath the band of washed up fucoids marking the strand line. After a steep drop of ca.1m, the strand sloped gently to low water, extending eastwards for about 500m. Numerous tidal channels crossed the beach in the mid and lower shores. The mid shore consisted of very fine compact sand covered by a mat of green algae. The lower shore was also characterised by fine sands where high numbers of tellinids were present in the sediment.



**Figure 3.1.2.** Transect 1 profile at Baltray Strand. Site No. 1 Boyne Coast and Estuary, Co. Louth.



**Figure 3.1.3.** Panoramic view of Transect 1 from top-shore. Site No. 1 Boyne Coast and Estuary, Co. Louth.

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## Site No.1 Boyne Coast and Estuary

### Transect 1

#### Strand Line

Station coordinates: 53° 43.856'N, 06° 14.992'W

Distance from High Water: 0m

Height above Low Water: 6.29m

Main sediment type: sand and shingle

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>
<i>Talitrus saltator</i>	-A	A
Diptera indet.	-	C

Number of taxa: 2

#### Station description

The strandline consisted of fine gravely sand with shells, cobble and pebble (see Photo 3.1.1.). The fauna recorded consisted only of sand flies and talitrid amphipods present among the dead fucoids in the high water mark.

#### Biotope

Similar to 'LS.Lsa.St.Tal Talitrids in the upper shore and strand line' described by JNCC Marine Habitat Classification system (Connor *et al.*, 2004).





**Photo 3.1.1.** Transect 1. Area above the strand line. Site No. 1 Boyne Coast and Estuary, Co. Louth.

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## Site No.1 Boyne Coast and Estuary

### Transect 1

#### Station 1. Upper Shore

Station coordinates: 53° 43.863'N, 06° 14.962'W

Distance from High Water: 20m

Height above low water: 3.62m

Main sediment type: fine sand

Fauna recorded

Taxon name	Core	Dig	Observed
<i>Hediste diversicolor</i>	1	-	-
<i>Tubificoides pseudogaster</i>	13	-	-
<i>Tubificoides benedii</i>	2	-	-
<i>Eurydice pulchra</i>	9	-	-
Trichoptera sp.	6	-	-
Tipulidae sp.	1	-	-
<i>Nucula nitidosa</i>	1	-	-

Number of taxa: 7

#### Station description

The upper shore station was located at the foot of the shingle band near the grassy dune and it consisted of very fine rippled sand (see Photo 3.1.2). After processing the core samples, taxonomic analyses revealed the presence of 7 different species: 2 species of oligochaetes (*Tubificoides benedii* and *Tubificoides pseudogaster*), 1 species of polychaete (*Hediste diversicolor*), 1 bivalve (*Nucula nitidosa*), 1 isopod (*Eurydice pulchra*) and the larval stages of a tipulid (Diptera) and a caddis fly (Trichoptera).

#### Biotope

No similar grouping was found in the JNCC Marine Habitat Classification for littoral sands (Connor *et al.*, 2004). There is however a similar grouping listed for littoral muds i.e. 'L.S.LMu.Uest.Hed.Ol. *Hediste diversicolor* and oligochaetes in littoral mud'



**Photo 3.1.2.** Transect 1. Station 1. Upper shore. Site No. 1 Boyne Coast and Estuary, Co. Louth.



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## Site No.1 Boyne Coast and Estuary

### Transect 1

Station 2. Mid shore

Location: 53° 43.915' N, 06° 14.656' W

Distance from High Water: 250m

Height above low water: 0.83m

Main sediment type: fine sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Nephtys</i> sp.	-	F	-
<i>Nephtys caeca</i>	11	-	-
<i>Nephtys cirrosa</i>	7	-	-
<i>Nephtys hombergii</i>	2	-	-
<i>Scoloplos armiger</i>	2	-	-
Tubificidae sp.	1	-	-
<i>Gammarus duebeni</i>	1	-	-
<i>Angulus tenuis</i>	29	C	-
<i>Donax vittatus</i>	38	A	-

Number of taxa: 9

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	A
<i>Ulva lactuca</i>	O

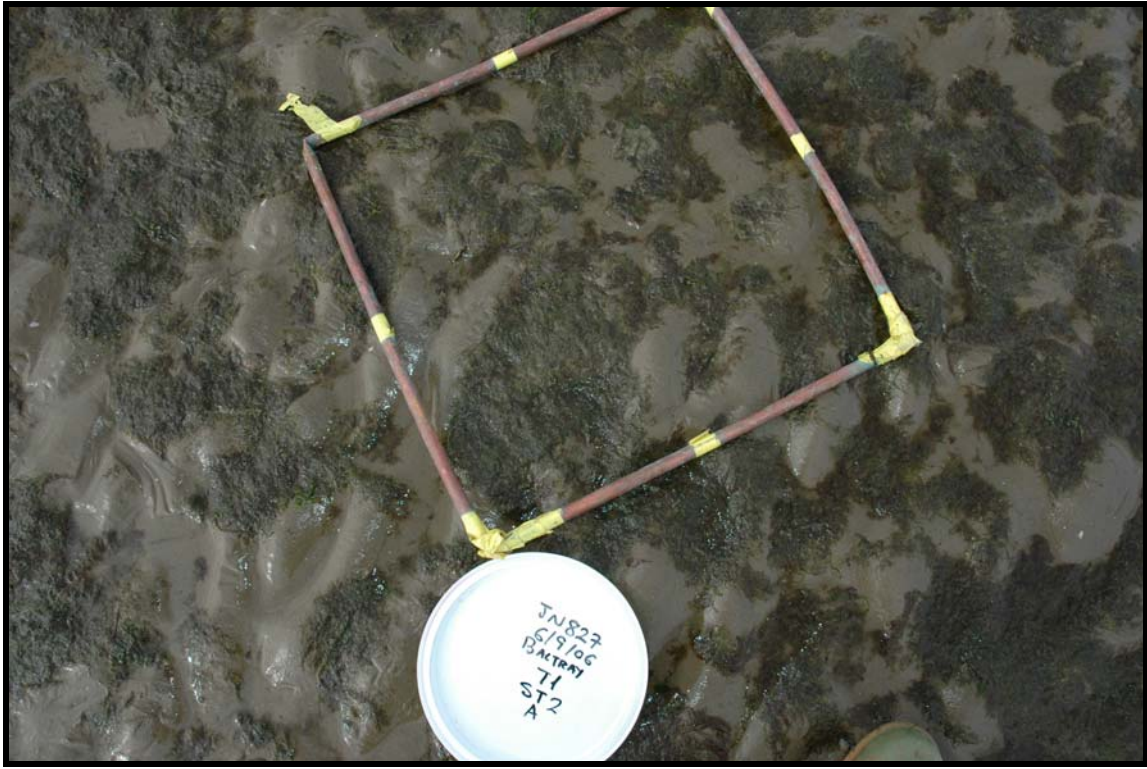
Station description

The mid shore station was characterised by rippled fine silty sands (80.6% fine sand) covered by a mat of green algae (*Enteromorpha* sp. and *Ulva lactuca*). The presence of polychaetes of the genus *Nephtys* and numerous bivalves (*Angulus tenuis*, *Donax* sp.) was recorded from the dug up area. The taxonomic analysis of the samples confirmed the latter, recording three species of *Nephtys* along with *Scoloplos armiger* and one tubificid worm.

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Biotope

Similar to 'Polychaetes and *Angulus tenuis* in littoral fine sand LS.LSa.FiSa.Po.Aten' described by JNCC Marine Habitat Classification system (Connor *et al.*, 2004).



**Photo 3.1.3.** Transect 1. Station 2. Mid shore. Site No. 1 Boyne Coast and Estuary, Co. Louth.

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## Site No.1 Boyne Coast and Estuary

### Transect 1

Station 3. Lower shore.

Location: 53° 43.93' N, 06° 14.50' W

Distance from High Water: 350m

Height above low water: 0m

Main sediment type: fine sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Sigalion mathildae</i>	1	-	-
<i>Hediste diversicolor</i>	1	O	-
<i>Nephtys</i> sp.	-	F	-
<i>Nephtys caeca</i>	2	-	-
<i>Nephtys cirrosa</i>	5	-	-
<i>Orbinia latreillii</i>	2	-	-
<i>Scoloplos armiger</i>	2	O	-
<i>Heterochaeta costata</i>	1	-	-
<i>Gammarus</i> sp.	7	-	-
<i>Idotea linearis</i>	2	-	-
<i>Carcinus maenas</i>	1	-	O
<i>Modiolula phaseolina</i>	1	-	-
<i>Angulus tenuis</i>	73	S	-
<i>Donax vittatus</i>	67	S	A
<i>Ophiura albida</i>	6	C	C

Number of taxa: 15

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	O

Number of taxa: 1

Station description

The third station of the transect was located beside the waterline, ca. 400 metres from the top of the shore. The main component of the sediment in this station was fine clean sand. (83.53%). Green alga *Enteromorpha* sp. was thinly present on the substrate surface. *Ophiura*

*albida*, *Nephtys* sp., *Scoloplos armiger* and tellinid bivalves were recorded during the dig over of the 1m<sup>2</sup> area. A total of 14 different macroinvertebrate species were recorded from the core samples; the bivalves *Angulus tenuis* and *Donax vittatus* were the most abundant species followed by some amphipods of the genus *Gammarus* and the polychaete *Nephtys cirrosa*.

#### Biotope

Similar to 'Polychaetes and *Angulus tenuis* in littoral fine sand LS.LSa.FiSa.Po.Aten' described by JNCC Marine Habitat Classification system (Connor *et al.*, 2004).



**Photo 3.1.4.** Transect 1. Station 3. Lower shore. Site No. 1 Boyne Coast and Estuary, Co. Louth.



**Photo 3.1.5.** Transect 1. Station 3. Close-up photograph showing the brittle starfish *Ophiura albida* on the lower shore station. Site No. 1 Boyne Coast and Estuary, Co. Louth.

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## Site No.1 Boyne Coast and Estuary

### Transect 2

Location: 2 km North-East of Mornington, Co. Meath

Date: 06.09.06

Transect starting point: 53° 43.66' N, 06° 15.81' W

Exposure: extremely sheltered

Sediment grain size and organic carbon content:

<b>Transect 2.</b>	<b>T2 S1</b>	<b>T2 S2</b>	<b>T2 S3</b>
<b>Mornington, Co.Meath</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	0	0	0
Coarse sand	0	0	0.28
Medium sand	4.81	4.14	4.01
Fine sand	40.45	34.7	19.02
Very fine sand	18.82	18.18	14.24
Silt	35.92	42.98	62.45
Total Organic Carbon (C%)	1.51	0.59	1.49

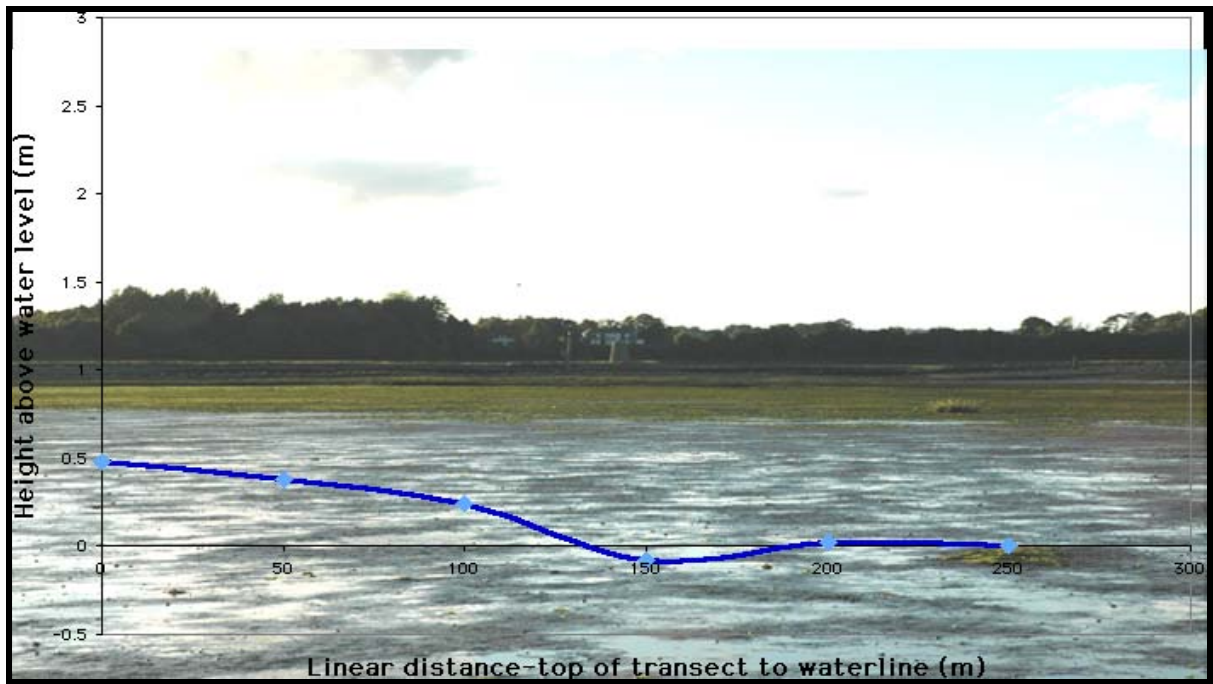
### Site description

The site surveyed was located on the mudflats south of the river Boyne, north-east of the town of Mornington, Co. Meath (see Figure 3.1.1.). The transect was delineated on a north-western direction, starting at the edge of the marshland and extending approximately 250 metres. The lower shore station was located ca. 200 metres from the Boyne channel; due to the extremely soft nature of the sediment, it was not possible to get to low water.

The upper shore consisted of a salt marshland dominated by *Spartina anglica* on muddy sediments for about 100m giving way to anoxic muds covered by green algae (*Ulva lactuca* and *Enteromorpha intestinalis*) and also characterised by the high densities of the gastropod *Hydrobia neglecta* present on the sediment surface of the mid and lower shores. Talitrid amphipods were not recorded in the strand line.

This area is a bird sanctuary and numerous bird species were recorded during the survey, including little egret, golden plover, ringed plover, mallard, curlew, oystercatcher, grey heron, dunlin, redshank, greenshank and 'commic' terns.





**Figure 3.1.4.** Transect 2 profile at Mornington, Co. Meath. Site No.1 Boyne Coast and Estuary, Co. Meath.



**Photo 3.1.6.** View of Transect 2 from lower shore station. Near Mornington, River Boyne Estuary, Co. Meath

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## Site No.1 Boyne Coast and Estuary

### Transect 2

#### Station 1 Upper Shore

Location: 53° 43.66' N, 06° 15.81' W

Distance from High Water: 0m

Height above Low Water: 0.48m

Main sediment type: fine muddy sand

Fauna recorded

Taxon name	Core	Dig	Observed
<i>Eteone longa</i>	5	-	-
<i>Hediste diversicolor</i>	42	S	A
<i>Tubificoides pseudogaster</i>	3	-	-
<i>Tubificoides benedii</i>	5	-	-
<i>Scrobicularia plana</i>	1	C	-

Number of taxa: 5

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	A
<i>Spartina anglica</i>	P

Number of taxa: 2

#### Station description

The upper shore station was located directly at the end of the *Spartina anglica* marshland and it consisted of fine hypoxic sands (40.45% fine sand) with a high component of silt (36%). The sediment was soft with shallow pools of standing water. Patches of green filamentous algae (*Enteromorpha* sp.) covered approximately 60% of the substrate in some areas. The main component of the macroinvertebrate fauna recorded was the ragworm *Hediste diversicolor*. The analysis of the core samples returned one other polychaete species (*Eteone longa*), oligochaetes and 1 bivalve (*Scrobicularia plana*).



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## Biotope

No similar grouping was found in the JNCC Marine Habitat Classification (Connor *et al.*, 2004) for littoral sands. There is however a similar grouping listed for littoral muds i.e. ‘L.S.LMu.Uest.Hed.Ol *Hediste diversicolor* and oligochaetes in littoral mud’.



**Photo 3.1.7.** Transect 2. Surveyor sampling the upper shore station, close to the *Spartina anglica* saltmarsh. Proximities of Mornington, Boyne Estuary, Co. Meath.

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## Site No.1 Boyne Coast and Estuary

### Transect 2

#### Station 2 Mid Shore

Location: 53° 43.70' N, 06° 15.90 'W

Distance from High Water: 100m

Height above Low Water: 0.24m

Main sediment type: Muddy sand

Fauna recorded:

Species	Core	Dig	Observed
<i>Eteone longa</i>	4	-	-
<i>Hediste diversicolor</i>	49	A	A
<i>Pygospio elegans</i>	10	-	-
<i>Tubificoides pseudogaster</i>	13	-	-
<i>Tubificoides benedii</i>	2	-	-
<i>Carcinus maenas</i>	5	-	O
<i>Hydrobia negelecta</i>	329	-	S
<i>Parvicardium minimum</i>	1	-	-
<i>Macoma balthica</i>	4	O	-
<i>Abra</i> sp.	-	O	-
<i>Abra alba</i>	2	-	-
<i>Abra tenuis</i>	1	-	-
<i>Scrobicularia plana</i>	5	C	-

Number of taxa: 13

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	O
<i>Ulva lactuca</i>	C
<i>Spartina anglica</i>	P

Number of taxa: 3

#### Station description

The mid shore station was located ca.100m inside the Boyne Estuary mudflats near Mornington. The sediment consisted of soft muddy sand (34.7% silt, 42.98% fine sand)

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covered by *Enteromorpha* spp., *Ulva lactuca* and single stems of *Spartina anglica*. As regards to the faunal component, the gastropod *Hydrobia neglecta* was regarded as superabundant according the MNCR SACFOR scale (from the JNCC website, after Hiscock 1996), followed by the ragworm *Hediste diversicolor*, regarded as abundant. Other macroinvertebrate species included several species of bivalves such as *Scrobicularia plana*, *Macomoma baltica* and *Abra* spp.

#### Biotope

Similar to 'LS.LMu.MEst.HedMacScr *Hediste diversicolor*, *Macoma balthica* and *Scrobicularia plana* in littoral sandy mud' listed by JNCC Marine Habitat Classification system (Connor *et al.*, 2004).



**Photo 3.1.8.** Transect 2. Station 2. Mid shore. Site No.1 Boyne Coast and Estuary, Co. Meath.

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## Site No.1 Boyne Coast and Estuary

### Transect 2

#### Station 3 Lower shore

Location: 53° 43.73' N, 06° 16.10 'W

Distance from High Water: 200m

Height above Low Water: not recorded

Fauna recorded

Species	Core	Dig	Observed
<i>Eteone longa</i>	2	-	-
<i>Hediste diversicolor</i>	23	A	-
<i>Tubificoides pseudogaster</i>	1	-	-
<i>Hydrobia neglecta</i>	132	-	S
<i>Macoma balthica</i>	9	O	-
<i>Scrobicularia plana</i>	20	C	-

Number of taxa: 6

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	A
<i>Ulva lactuca</i>	C

Number of taxa: 2

#### Station description

This station was located ca.100m from station 2 on the mudflats close to the Boyne Channel. Due to the depth of the mud a closer approach to low water was not possible.

The area was characterised by anoxic muds covered by green filamentous algae *Enteromorpha* sp. and *Ulva lactuca*. The results from the granulometric analysis showed dominance of the silty fraction (62.45%) with some fine (19.02%) and very fine sand (14.24%). As regards to the fauna *Hydrobia neglecta* was regarded as superabundant from the observations, while *Hediste diversicolor* and *Scrobicularia plana* were also characteristic of this station.



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Biotope

Similar to 'LS.LMu.MEst.HedMacScr *Hediste diversicolor*, *Macoma balthica* and *Scrobicularia plana* in littoral sandy mud' listed by JNCC Marine Habitat Classification system (Connor et al., 2004).



**Photo 3.1.9.** Transect 2. Station 3. Lower shore. Site No.1 Boyne Coast and Estuary, Co. Meath.



### 3.2 Site 2 Baldoye Bay, Co. Dublin.



Figure 3.1.1 Map showing the location of the three transects surveyed on the Baldoye Bay area, Co. Dublin.

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## Site No.2 Baldoye Bay, Co. Dublin

### Transect 1

Location: Claremont Beach, 1km east of Howth Harbour.

Date: 13.07.06

Transect starting point: 53° 23.517'N, 06° 05.033' W

Exposure: Moderately exposed

Sediment grain size and organic carbon content:

	<b>T1 S1</b>	<b>T1 S2</b>	<b>T1 S3</b>
<b>Howth Transect 1</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	3.92	7.4	7.32
Coarse sand	2.21	2.73	0.2
Medium sand	20.38	30.08	26.78
Fine sand	70.85	58.66	63.87
Very fine sand	2.65	1.13	1.81
Silt	0	0	0
Total Organic Carbon (C%)	0.06	0.11	0.09

### Site description:

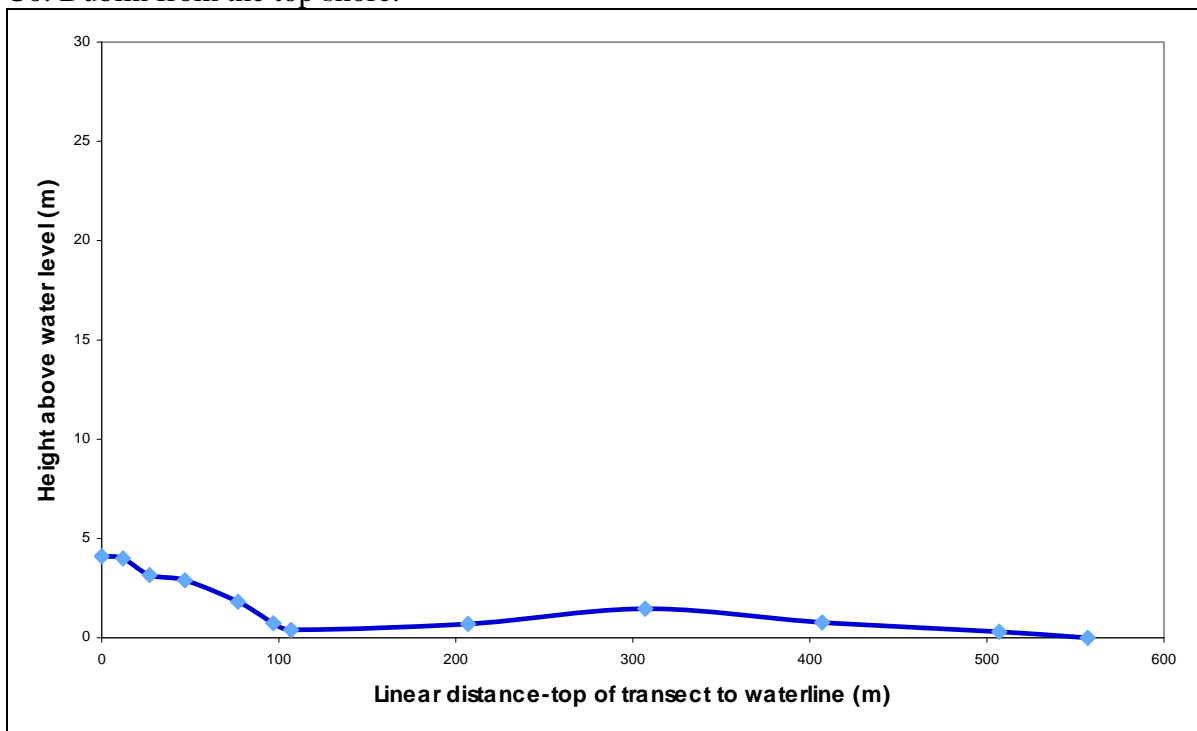
The surveyed site was located on the beach known as Claremont Beach, east of the village of Howth, in the north of County Dublin (Co. Fingal). The area consists of a partially protected sandy beach extending eastwards from Cush Point to the quay wall in Howth Harbour. The strand is protected by Ireland's Eye on the north-east, Howth Harbour to the east and Portmarnock Peninsula to the west, being only exposed to the north and northwest.

The beach extends northwards from a concrete shouldered rock and boulder wall. At low water, several tidal channels and pools cross the strand with a deeper (ca 60 cm) one located ca. 100 metres from the starting point of the transect, behind a rocky outcrop. The transect extended from the upper shore near the protection wall to the low water line ca. 600m to the northeast. The main sediment type encountered was fine sand, with *Arenicola marina* casts and *Ensis* and other bivalve burrows extending from the mid shore (upper eulittoral) to the lower eulittoral, upper sublittoral. The presence of abundant shrimp *Crangon crangon* and sand gobbies was recorded from the intertidal pools, along with

numerous amphipod burrows on the upper littoral and supralittoral areas. A sample of several talitrid amphipods was obtained from the strand line.



**Figure 3.2.2.** Panoramic view of Transect 1. Claremont Beach, Site No.2. Baldoyle Bay, Co. Dublin from the top shore.



**Figure 3.2.3.** Profile Transect 1. Background image shows the rocky outcrop and fucoids located 100m from top shore. Site No.2. Baldoyle Bay, Co. Dublin.



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## Site No.2 Baldoye Bay, Co. Dublin

### Transect 1

#### Strand line

Location: 53° 23.517'N, 06° 05.033' W

Distance from High Water: 0m

Height above Low Water: 4.1m

Main sediment type: fine sand and bedrock

Fauna recorded

Taxon name	Dig	Observed
<i>Talitrus saltator</i>	A	A

Number of taxa: 1

#### Station description

The top shore was located just below the stonewall that backs Claremont Beach, consisting of exposed bedrock and fine sand. Talitrid amphipods were present in burrows excavated in the sand and underneath the stones and drift seaweed.

#### Biotope

Similar to 'LS.Lsa.St.Tal Talitrids in the upper shore and strand line' described by JNCC Marine Habitat Classification system (Connor *et al.*, 2004).



**Photo 3.2.1.** Top shore in Claremont Beach, Transect 1. Site No.2 Baldoye Bay, Co. Dublin

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## Site No.2 Baldoye Bay, Co. Dublin

### Transect 1

#### Station 1. Upper shore.

Location: 53° 23.00' N, 06° 05.00' W

Distance from High Water: 12m

Height above Low Water: 4.0m

Main sediment type: fine sand and cobbles

Fauna recorded

Taxon name	Core	Dig	Observed
Chironomidae sp.	16	-	-
<i>Sigalion mathildae</i>	12	O	-
<i>Nephtys cirrosa</i>	4	O	-
<i>Littorina obtusata</i>	4	-	-
<i>Angulus tenuis</i>	16	F	-

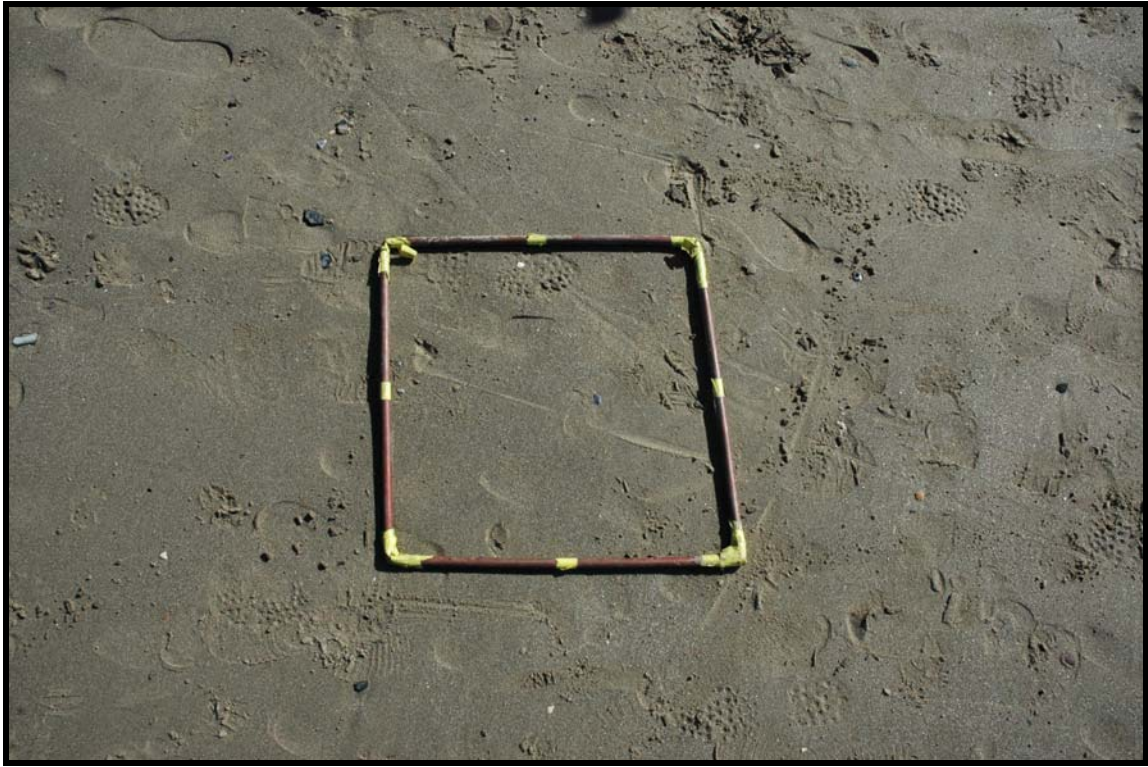
Number of taxa: 5

#### Station description

The station was located 12m from the rocks near the protection wall on the upper infralittoral, just after the strand line. The sediment consisted of fine compact sand with some stones, pebbles, shells and scattered rocks and boulders. The taxonomic analysis of the core samples reported 5 different species of macroinvertebrates dominated by dipteran larvae (Chironomidae), the polychaete *Sigalion mathildae* and the bivalve *Angulus tenuis*.

#### Biotope

Similar to 'Polychaetes and *Angulus tenuis* in littoral fine sand LS.LSa.FiSa.Po.Aten' listed by JNCC Marine Habitat Classification system (Connor *et al.*, 2004).



**Photo 3.2.2.** Transect 1. Station 2. Upper shore. Site No. 2. Baldoyle Bay, Co. Dublin.

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## Site No.2 Baldoye Bay, Co. Dublin

### Transect 1

#### Station 2. Mid shore

Location: 53° 23.6' N, 06° 05.067' W

Distance from High Water: 107m

Height above Low Water: 0.4m

Main sediment type: fine to medium sand

Fauna recorded

Taxon name	Core	Dig	Observed
<i>Glycera</i> sp.	-	O	-
<i>Glycera tridactyla</i>	4	-	-
<i>Nephtys</i> sp.	-	A	-
<i>Nephtys cirrosa</i>	16	-	-
<i>Scoloplos armiger</i>	10	C	-
<i>Prionospio</i> sp.	4	-	-
<i>Magelona filiformis</i>	4	-	-
Maldanidae indet.	-	C	O
<i>Euclymene oerstedii</i>	12	-	-
<i>Arenicola marina</i>	-	-	C
<i>Terebellidae</i> indet.	4	O	-
<i>Lanice conchilega</i>	4	-	O
<i>Pontocrates arenarius</i>	4	-	-
<i>Angulus tenuis</i>	4	C	-
<i>Tapes rhomboides</i>	8	C	-
<i>Amphipholis squamata</i>	1	-	R

Number of taxa: 15

#### Station description

A rocky outcrop including a rock pool ca. 100m from the concrete wall was investigated on the way to the mid shore station. Algal zonation patterns were those of a sheltered rocky shore dominated by *Fucus serratus* (80% cover). Presence of shrimp *Crangon crangon* and sand gobbies was noted along with green crabs *Carcinus maenas*, anemones *Actinia* sp, juvenile flatsfish and one specimen of sea-scorpion *Taurulus bubalis*.

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The presence of shrimp *Crangon crangon* was noted in all the tidal channels crossed along the transect.

The sediment in the mid shore station consisted of compact medium (30.08%) and fine sand (58.66%). The sediment surface was characterised by numerous ripples and crevices (see Photos 3.2.3 and 3.2.4). *Arenicola marina* casts and *Lanice conchilega* tubes were recorded in some patchy areas from the rock pool to the lower shore. Glycerids, *Lanice conchilega* tubes and amphipod burrows were recorded in the area that was dug over. Unidentified species of genus *Nephtys*, a few *Scoloplos armiger* and maldanids were common. Bivalves recorded were represented by *Angulus tenuis* and *Tapes rhomboides*.

As regards to the core samples faunal analysis polychaetes were dominant, the species *Nephtys cirrosa* and *Scoloplos armiger* being the most abundant. Other species recorded included 1 amphipod (*Pontocrates arenarius*) and 2 bivalves (*Tapes rhomboides* and *Angulus tenuis*).

#### Biotope

Similar to 'Polychaetes and *Angulus tenuis* in littoral fine sand LS.LSa.FiSa.Po.Aten' listed by JNCC Marine Habitat Classification system (Connor *et al.*, 2004).



**Photo 3.2.3.** Transect 1. Station 2. Mid shore. Site No.2 Baldoyle Bay, Co. Dublin.





**Photo 3.2.4.** View of the mid shore in Claremont beach, Howth. Note the crevices and ridges that characterised the substrate surface. Transect 1, Baldoyle Bay, Co. Dublin

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**Site No.2 Baldoye Bay, Co. Dublin****Transect 1**Station 3. Lower shore.

Location: 53° 23.30' N 06 °04.733' W

Distance from High Water: 570m

Height above Low Water: 0m

Main sediment type: fine to medium sand

Fauna recorded

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
Nemertea sp.	8	-	-
<i>Sigalion mathildae</i>	4	-	-
<i>Glycera</i> sp.		C	
<i>Glycera lapidum</i>	10	-	-
<i>Glycera tridactyla</i>	3	-	-
<i>Nephtys</i> sp.	-	A	-
<i>Nephtys cirrosa</i>	20	-	-
<i>Nephtys kersivalensis</i>	4	-	-
<i>Scolelepis foliosa</i>	4	-	-
<i>Spio decorata</i>	12	-	-
<i>Magelona filiformis</i>	4	-	-
<i>Magelona mirabilis</i>	1	-	-
<i>Arenicola marina</i>	-	-	C
<i>Lanice conchilega</i>	1	-	O
<i>Tubificoides pseudogaster</i>	4	-	-
<i>Tubificoides benedii</i>	33	-	-
<i>Pontocrates altamarinus</i>	4	-	-
<i>Synchelidium maculatum</i>	8	-	-
<i>Tryphosella</i> sp.	4	-	-
<i>Bathyporeia gracilis</i>	3	-	-
<i>Bathyporeia pelagica</i>	3	-	-
<i>Bodotria scorpioides</i>	8	-	-
<i>Pseudocuma longicornis</i>	4	-	-
<i>Crangon crangon</i>	4	-	A

<i>Liocarcinus depurator</i>	4	-	-
<i>Mytilus edulis</i>	4	-	-
<i>Ensis ensis</i>			O
<i>Angulus tenuis</i>	15	C	-
<i>Donax vittatus</i>	140	S	-
<i>Amphipholis squamata</i>	4	-	O

Number of taxa: 29

Flora recorded:

Taxon name	Observed
<i>Ulva lactuca</i>	O

Number of taxa: 1

#### Station description

Situated at the lower eulittoral/upper sublittoral band this station consisted of fine to medium compact sands. Sediment surface was characterised by ripples and some *Ulva lactuca* present. The general observations of the lower shore area included occasional *Ensis ensis* siphon holes and casts of the lugworm *Arenicola marina* (common). Macroinvertebrates recorded in the 1m<sup>2</sup> area that was dug up included *Glycera* sp. (abundant), *Nephtys* sp. (abundant), *Donnax vittatus* (superabundant) and *Angulus tenuis* (common). The faunal community recorded after the analysis of the core samples was the most diverse of three stations sampled along the transect. A total of 29 taxa including 13 taxa of polychaetes, 9 different crustaceans, 4 taxa of molluscs and 1 echinoderm. *Donax vittatus* was the most abundant species overall with 140 specimens found in the core samples.

#### Biotope

Similar to 'Polychaetes and *Angulus tenuis* in littoral fine sand LS.LSa.FiSa.Po.Aten' listed by JNCC Marine Habitat Classification system (Connor *et al.*, 2004).



**Photo 3.2.5.** Transect 1. Station 3. Lower shore. Site No.2 Baldoyle Bay, Co. Dublin.

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## Site No.2 Baldoyle Bay, Co. Dublin

### Transect 2

Location: Baldoyle Harbour, near Maynetown Bridge, 2km south of Portmarnock, Co. Dublin.

Date: 13.07.06

Transect starting point: 53° 24.567' N 06° 08.133' W

Exposure: Extremely sheltered

Sediment grain size and organic carbon content:

	<b>T2 S1</b>	<b>T2 S2</b>	<b>T2 S3</b>
<b>Mayne River Transect 2</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	32.15	0	0
Very coarse sand	19.94	3.7	3.7
Coarse sand	6.73	8.46	8.46
Medium sand	4.87	10.08	10.08
Fine sand	11.81	31.84	31.84
Very fine sand	22.39	11.58	11.58
Silt	2.13	34.34	34.34
Total Organic Carbon (C%)	1.30	1.43	2.02

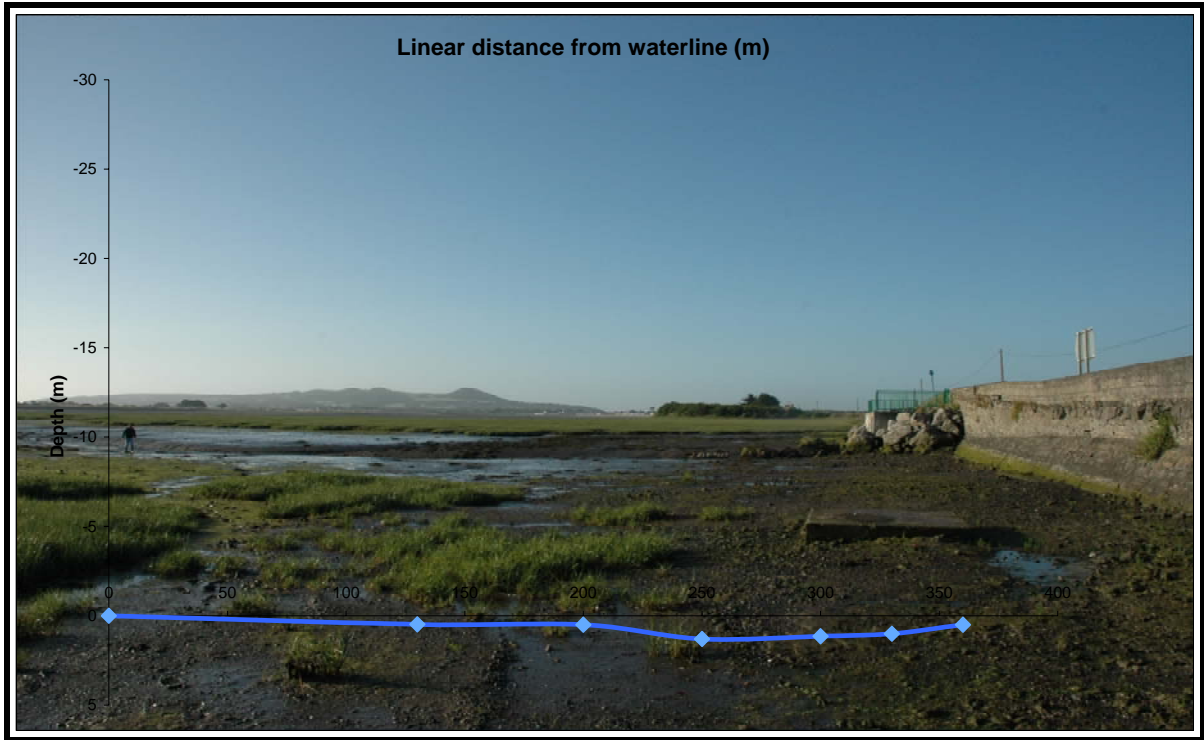
### Site description:

The transect was located in Baldoyle Harbour which is a narrow estuarine inlet between the sand dune system that forms Portmarnock Peninsula to the east and the coast line that extends from Portmarnock to Baldoyle to the west. Two rivers flow into the harbour, the Mayne and the Sluice, forming the main channel that runs through the estuary. This shallow harbour consists of extensive mudflats on the western side of the channel and sandy muds on the eastern side.

The transect starting point was located in a very sheltered area near the bridge over the River Mayne, on its northern side. The upper shore consisted of thin mud over gravel in a salt marshland of *Spartina anglica* that extended for almost 100m east into the bay giving way to mud flats covered by *Enteromorpha* spp. diatoms and gastropods (*Hydrobia* spp.) in high densities. The sediment type was deep anoxic mud of about 10cm-25cm deep over gravel. Fauna recorded included *Hediste diversicolor* and *Hydrobia* spp. Due to the



extremely soft nature of the sediment, only the upper shore station could be sampled; mid and lower shore stations were sampled from the boat using a small Van Veen grab (Sampling area=0.025 m<sup>2</sup>). A geo-referenced acoustic bathymetry plot substituted the shore levels taken using the surveyor's level and staff. No underwater photographs could be taken due to the poor visibility conditions dominant at the time of the survey. No talitrid amphipods were observed in the strand line.



**Figure.3.2.4.** View of Transect 2 from the salt marshland area in the upper shore. Site No. 2 Baldoye Bay, Co, Dublin.

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## Site No.2 Baldoyle Bay, Co. Dublin

### Transect 2

#### Station 1. Upper shore

Location: 53° 24.567' N, 06° 08.133' W

Distance from upper shore: 0m

Main sediment type: muddy sand on gravel

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Hediste diversicolor</i>	4	C	C
<i>Pygospio elegans</i>	1	-	-
<i>Manayunkia aestuarina</i>	3	-	-
<i>Tubificoides pseudogaster</i>	13	-	-
<i>Tubificoides benedii</i>	32	-	-
<i>Bathyporeia gracilis</i>	2	-	-
<i>Carcinus maenas</i>	1	-	O
<i>Hydrobia neglecta</i>	160	-	S

Number of taxa: 8

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	A
<i>Ulva lactuca</i>	A

Number of taxa: 2

#### Station description

The station situated on the north side of the River Mayne where it enters Baldoyle Estuary. The area surveyed was located at the upper edge of the saltmarsh and it consisted of gravel (32.15%) and silty sand. Vegetation on the top of the mudflats was dominated by *Spartina anglica* and reeds. A mat of *Ulva lactuca* and *Enteromorpha* sp. covered almost 80% of the sediment surface. Fauna observed included superabundant *Hydrobia neglecta* and common *Hediste diversicolor*. The results of the taxonomic analysis from the core samples recorded 9 macroinvertebrates taxa being the gastropod *Hydrobia neglecta* the most abundant species. Moderate numbers of tubificid oligochaetes were also recorded along with polychaetes typical of estuarine habitats, where brackish conditions are dominant, such as

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the ragworm *Nereis diversicolor*, the sabellid *Manayunkia aestuarina* and the spionid *Pygospio elegans*.

Biotope

Not listed by JNCC Marine Habitat Classification system.



**Photo 3.2.6.** Transect 2. Station 1. Upper shore. Site No. 2 Baldoyle Bay, Co. Dublin.

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## Site No.2 Baldoyle Bay, Co. Dublin

### Transect 2

#### Station 2. Mid shore

Location: 53° 24.582 N, 06° 07.881' W

Distance from upper shore: 250m

Depth: 1.3m

Main sediment type: Muddy sand

Fauna recorded:

Taxon name	Core	Dig	Observed
Chironomidae sp.	3	-	-
Nematoda sp.	3	-	-
Nemertea sp.	3	-	-
<i>Eteone longa</i>	8	-	-
<i>Hediste diversicolor</i>	26	S	-
<i>Malacoceros vulgaris</i>	1	-	-
<i>Pygospio elegans</i>	32	-	-
<i>Capitella capitata</i>	8	-	-
<i>Manayunkia aestuarina</i>	9	-	-
<i>Heterochaeta costata</i>	1	-	-
<i>Tubificoides pseudogaster</i>	140	-	S
<i>Tubificoides benedii</i>	306	-	S
<i>Corophium volutator</i>	3	-	-
<i>Hydrobia neglecta</i>	60	-	S
<i>Abra tenuis</i>	1	-	-
<i>Scrobicularia plana</i>	1	-	-

Number of taxa: 16

#### Station description

This station was sampled from an inflatable boat using a small Van Veen grab (0.025m<sup>2</sup> sampling area). Four replicate grabs were taken. Additionally, an area of 1m<sup>2</sup> was grab sampled and observations of the infauna present in the sediment were made on the boat. No photographs of the substrate surface were taken using underwater equipment due to the poor visibility at the time of the survey. Sediment consisted in anoxic mud (34.34%) with a high sand component (31.84% fine sand). *Hediste diversicolor* and tubificid oligochates

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were regarded as superabundant in the replicate grabs and in the 1m<sup>2</sup> area sampled. A total of 16 different taxa were recorded after taxonomic analysis of the samples. Characterising taxa included oligochaetes (*Tubificoides* spp), polychaetes (*Hediste diversicolor*, *Pygospio elegans*, *Manayunkia aestuarina*), amphipods (*Corophium volutator*) and bivalves (*Abra tenuis*, *Scrobicularia plana*).

#### Biotope

Similar to 'LS.LMu.MEst.HedMacScr *Hediste diversicolor*, *Macoma balthica* and *Scrobicularia plana* in littoral sandy mud' listed by JNCC Marine Habitat Classification system (Connor *et al.*, 2004).



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## Site No.2 Baldoye Bay, Co. Dublin

### Transect 2

#### Station 3. Lower shore

Location: 53° 24.529' N 06° 07.783' W

Distance from upper shore: 360m

Depth: 0.5m

Main sediment type: Muddy sand

Exposure: Exposed

Fauna recorded:

Taxon name	Cores	Dig	Observed
Chironomidae sp.	1	-	-
<i>Eteone longa</i>	27	-	-
<i>Hediste diversicolor</i>	16	A	-
<i>Nephtys</i> sp.	-	A	
<i>Nephtys cirrosa</i>	1	-	-
<i>Nephtys hombergii</i>	4	-	-
<i>Scoloplos armiger</i>	4	-	-
<i>Pygospio elegans</i>	26	-	-
<i>Capitella capitata</i>	1	-	-
<i>Arenicola marina</i>	1	C	-
Tubificidae sp.	365	S	-
<i>Tubificoides benedii</i>	88	-	-
<i>Corophium volutator</i>	1	-	-
<i>Crangon crangon</i>	6	-	-
<i>Hydrobia neglecta</i>	1	O	O
<i>Cerastoderma edule</i>	3	O	-
<i>Macoma balthica</i>	1	O	-
<i>Abra nitida</i>	1	O	-
<i>Scrobicularia plana</i>	1	O	-

Number of taxa: 18

#### Station description

The lower shore station was located near the channel, in the middle of the estuary. The area was accessed using an inflatable boat and sampled by means of a small Van Veen

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grab (0.025m<sup>2</sup> sampling area). Four replicate grabs were taken. An area of 1m<sup>2</sup> was also grab sampled from the boat using the Van Veen grab and observations of the infauna present were made on the boat. No photographs of the substrate surface were taken using underwater equipment due to the poor visibility at the time of the survey. Anoxic muddy sand was also the main sediment type in the station. The faunal assemblage was also very similar to the one recorded from the mid shore station, with a high component of species tolerant to brackish conditions such as tubificid oligochaetes and polychaetes including *Pygospio elegans* and *Hediste diversicolor*.

#### Biotope

Not listed in Connor et al. (2004). However, this assemblage is similar to 'LMU.HedMac.Pyg *Hediste diversicolor*, *Macoma balthica* and *Pygospio elegans* in sandy mud shores' of Connor et al. (1997)

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## Site No.2 Baldoye Bay, Co. Dublin

### Transect 3

Location: Velvet Strand, East of Portmarnock Peninsula, near Portmarnock Links, Co. Dublin.

Date: 13.07.06

Transect starting point: 53° 24.450' N, 06° 06.667' W

Sediment grain size and organic carbon content:

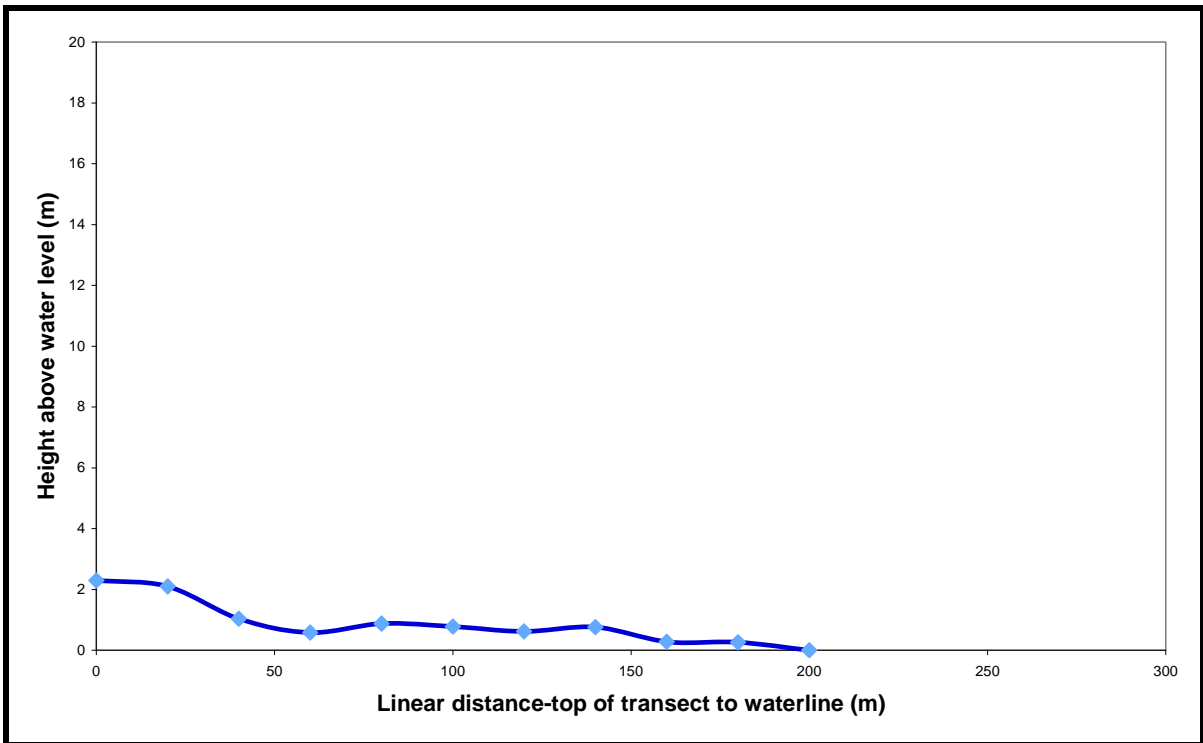
	<b>T3 S1</b>	<b>T3 S2</b>	<b>T3 S3</b>
<b>Velvet Strand Transect 3</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	3.72	3.96	2.94
Coarse sand	1.66	1.15	1.05
Medium sand	11.27	8.86	5.18
Fine sand	78.84	80.18	84.14
Very fine sand	4.53	5.84	6.67
Silt	0	0	0
Total Organic Carbon (C%)	0.06	0.09	0.09

### Site description

The site was located at Velvet Strand, a long sandy beach located on the eastern face of the peninsula east of Portmarnock known as Portmarnock Spit. This area was formerly a system of sand dunes that has been replaced by golf courses (Portmarnock Links, Portmarnock Golf Club) although some dunes are still intact at Portmarnock. The site was accessed from the golf club, the transect starting point being located on the upper shore at the bottom of the sand dunes. The area consisted of fine to very fine sand dominated by marram (*Ammophila arenaria*) on the edge of the sand bank. Numerous empty shells and pebbles/cobbles characterised the station along with amphipod burrows. Some talitrid amphipods were collected in the upper shore. The transect was delineated from this area extending eastwards for about 200 metres until reaching the waterline. A shallow channel that ran parallel to the shore was crossed ca. 50m from the starting point. The sandy beach consisted of rippled fine sands with *Lanice conchilega* tubes present on the mid to lower shores. The bivalve *Donax vittatus* was recorded from the area that was dug over.



**Photo 3.2.7.** View of Transect 3 from the lower shore. Velper Strand. Site No.2 Baldoyle Bay, Co. Dublin.



**Figure 3.2.6.** Transect 3 profile. Site No.2 Baldoyle Bay, Co. Dublin.

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## Site No.2 Baldoyle Bay, Co. Dublin

### Transect 3

#### Strand line

Location: 53° 24.433'N, 06° 06.783'W

Distance from High Water: 0m

Height above Low Water: 2.3m

Fauna recorded

Species	Dig	Observed
<i>Talitrus saltator</i>	C	C
Diptera indet.	-	C

Number of taxa: 2

#### Station description

The strand line consisted of fine sand, empty bivalve shells (*Ensis* sp., *Cerastoderma edule*, *Lutraria* sp., etc) and some pebble. Talitrid amphipods burrows were common along the supralittoral zone (above the high water mark). Sample specimens were collected.

#### Biotope

Similar to 'LS.LSa.St.Tal.Talitrids on the upper shore and strand line' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004)



**Photo 3.2.7.** Strand line station. Transect 3. Site No.2. Baldoyle Bay, Co. Dublin.

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## Site No.2 Baldoye Bay, Co. Dublin

### Transect 3

#### Station 1. Upper shore

Location: 53° 24.433' N, 06° 06.750' W

Distance from High Water: 20m

Height above Low Water: 2.1m

Main sediment type: fine sand.

#### Species list

Taxon name	Core	Dig	Observed
<i>Nephtys</i> sp.	-	O	-
<i>Nephtys cirrosa</i>	2	-	-
Terebellidae indet.	5	-	-
<i>Talitrus saltator</i>	8	A	A

Number of taxa: 4

#### Station description

Located below the sand banks, in the upper littoral (EHWS) this station consisted of fine sand with a sparse population of *Talitrus saltator*. The only other biological material in the samples were 2 *Nephtys cirrosa* and terebellid polychaetes.

#### Biotope

Similar to 'LS.LSa.St.Tal.Talitrids on the upper shore and strand line' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004)





**Photo 3.2.8.** Transect 3. Station 1. Upper shore. Site No.2 Baldoyle Bay, Co. Dublin.

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## Site No.2 Baldoye Bay, Co. Dublin

### Transect 3

#### Station 2. Mid shore

Location: 53° 24.467' N, 06° 06.650' W

Distance from High Water: 140m

Height above Low Water: 0.88m

Main sediment type: fine sand

Species list:

Taxon name	Core	Dig	Observed
Nematoda sp.	4	-	-
<i>Nephtys</i> sp.	-	A	-
<i>Nephtys cirrosa</i>	8	-	-
<i>Synchelidium maculatum</i>	8	-	-
<i>Arenicola marina</i>	-	-	C
<i>Lanice conchilega</i>	-	-	C
<i>Bathyporeia gracilis</i>	5	-	-
<i>Bathyporeia pelagica</i>	44	-	-
<i>Hydrobia neglecta</i>	4	-	-
<i>Angulus tenuis</i>	45	A	-

Number of taxa: 10

#### Station description

The station was located on an area of rippled fine sand (80.18%) with few *Arenicola marina* tubes (1-5/m<sup>2</sup>) and some tubes of *Lanice conchilega* present. A total 10 taxa were recorded being the bivalve *Angulus tenuis* (45 individuals) and the amphipod *Bathyporeia pelagica* (44 specimens) the most abundant species

#### Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.2.9.** Transect 3. Station 2. Mid shore. Site No.2 Baldoyle Bay, Co. Dublin.

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## Site No.2 Baldoyle Bay, Co. Dublin

### Transect 3

Station 3. Lower shore

Location: 53° 24.483' N, 06° 06.583' W

Distance from High Water: 200m

Height above Low Water: 0m

Main sediment type: fine sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Sigalion mathildae</i>	2	F	-
<i>Nephtys cirrosa</i>	17	A	-
<i>Orbinia latreillii</i>	4	C	-
<i>Scoloplos armiger</i>	24	A	-
<i>Polydora quadrilobata</i>	8	-	-
<i>Spio decorata</i>	8	-	-
<i>Magelona mirabilis</i>	4	-	-
<i>Capitella capitata</i>	8	-	-
<i>Arenicola marina</i>	-	-	C
<i>Lanice conchilega</i>	4	-	C
<i>Bathyporeia pelagica</i>	20	-	-
<i>Crangon crangon</i>	3	C	C
<i>Hydrobia neglecta</i>	12	-	-
<i>Angulus tenuis</i>	4	O	-
<i>Donax vittatus</i>	224	S	S
<i>Chamelea gallina</i>	1	-	-

Number of taxa: 16

### Station description

Located near low water, the area comprised rippled fine sands with a high abundance of tellinids. The results of the taxonomic analysis returned 15 different taxa of macroinvertebrates, including 9 polychaete species, 2 crustaceans and 4 molluscs. Highest densities were of *Donax vittatus* (224 specimens)

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## Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.2.7.** Transect 3. Station 3. Lower shore. Site No. 2 Baldoyle Bay, Co. Dublin.



### 3.3 Site 3. South Dublin Bay, Co Dublin.



Figure 3.3.1 Map showing the survey area.. Site 3, South Dublin Bay, Co. Dublin.



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### Site No.3 South Dublin Bay, Co. Dublin

#### Transect 1

Location: South Sandymount Strand, between Merrion Gates and Sandymount, south Co. Dublin.

Date: 12.07.06

Transect starting point: 54° 00.967' N, 06° 15.300' W

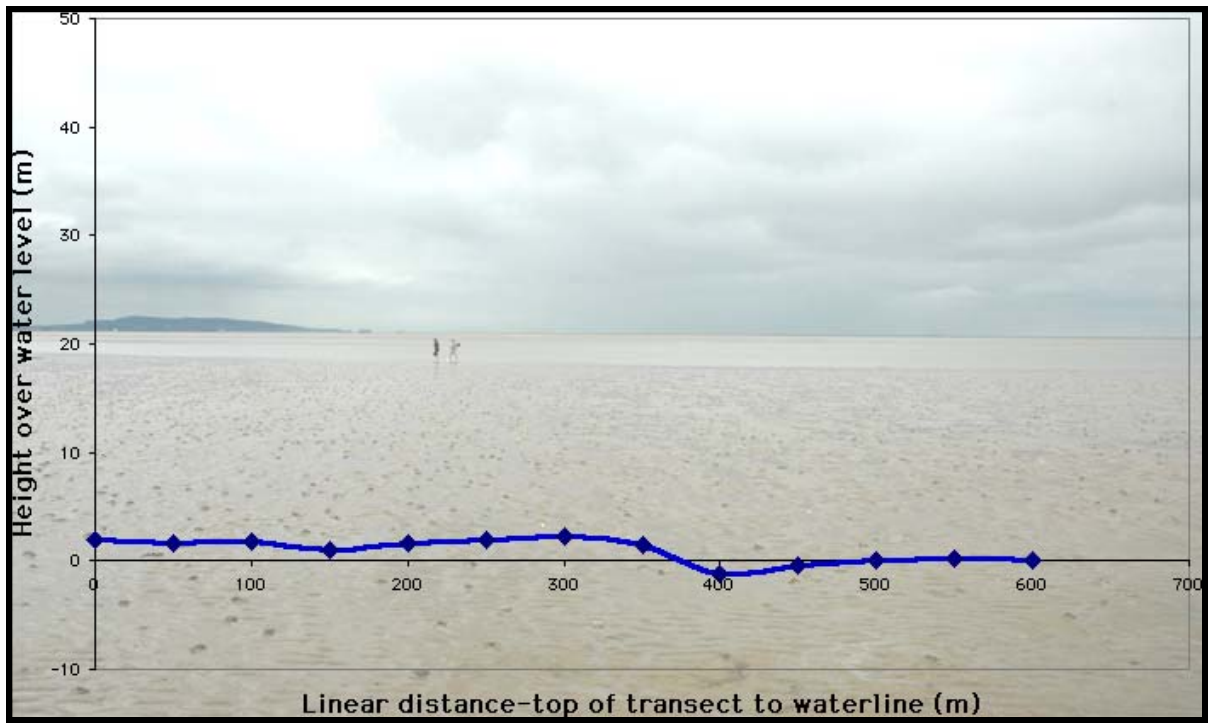
Exposure: Sheltered

Sediment grain size and organic carbon content:

	<b>T1 S1</b>	<b>T1 S2</b>	<b>T1 S3</b>
<b>Sandymount Transect 1</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	5.4	7.53	14.1
Coarse sand	1.05	0.85	0.18
Medium sand	6.32	3.41	3.67
Fine sand	80.01	76.79	68.21
Very fine sand	7.22	11.41	13.8
Silt	0	0.01	0
Total Organic Carbon (C%)	0.11	0.13	0.03

#### Site description:

The site was located on the extensive intertidal sands and mudflats located south of Dublin Harbour South Wall (South Bull), on the southern limit of the area known as Sandymount Strand. The transect was laid out on an easternly direction, beginning close to the stonewall and large boulders that back the strand, below Sandymount Martello Tower on the upper littoral. The transect extended across the strand until reaching the lower shore level, ca.1,500m to the east. The strand was even, relatively flat and consisting of fine sands with a cover of green filamentous algae *Enteromorpha* spp., some *Ulva lactuca* and, extending from the upper eulittoral (mid-shore) to the lower shore (ELWS), *Arenicola marina* casts, *Cerastoderma edule* siphon burrows and occasionally *Lanice conchilega* tubes. The presence of talitrid amphipod burrows was not observed and therefore no specimens were collected from the strand line.



**Figure 3.3.2.** Transect 1 profile and panoramic view from the mid-shore station. South Dublin Bay, Co. Dublin.

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## Site No.3 South Dublin Bay, Co. Dublin

### Transect 1

#### Strand line

Location: 54° 00.967'N, 06° 15.300'W

Distance from High Water: 0m

Height above Low Water: 2.00m

Main sediment type: coarse sand and shell

Fauna recorded: none

#### Station description

The supralittoral fringe consisted of a narrow band ca.2m wide extending from the protection wall and large boulders backing Sandymount Strand to the High Water mark (EHWS). The sediment consisted of coarse sand and broken shell. A band of *Enteromorpha* sp. was present 1m above the strandline. No talitrid amphipods or their burrows were recorded.

#### Biotope

Not listed in the JNCC Marine Habitat Classification system (Connor *et al.*, 2004).



**Photo 3.1.1.** Photograph showing the upper littoral fringe of Transect 1. Sandymount, South Dublin Bay.

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### Site No.3 South Dublin Bay, Co. Dublin

#### Transect 1

Station 1. Upper shore.

Location: 54° 19.517' N, 06° 12.267' W

Distance from High Water: 5m

Height above Low Water: 1.99m

Main sediment type: fine sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Sigalion mathildae</i>	16	-	-
<i>Nereis</i> sp.	4	A	-
<i>Nephtys</i> sp.	-	A	-
<i>Nephtys cirrosa</i>	4	-	-
<i>Pygospio elegans</i>	4	-	-
<i>Spiophanes bombyx</i>	8	-	-
<i>Magelona filiformis</i>	4	-	-
<i>Capitella capitata</i>	12	-	-
<i>Tubificoides benedii</i>	4	-	-
<i>Angulus tenuis</i>	4	F	-

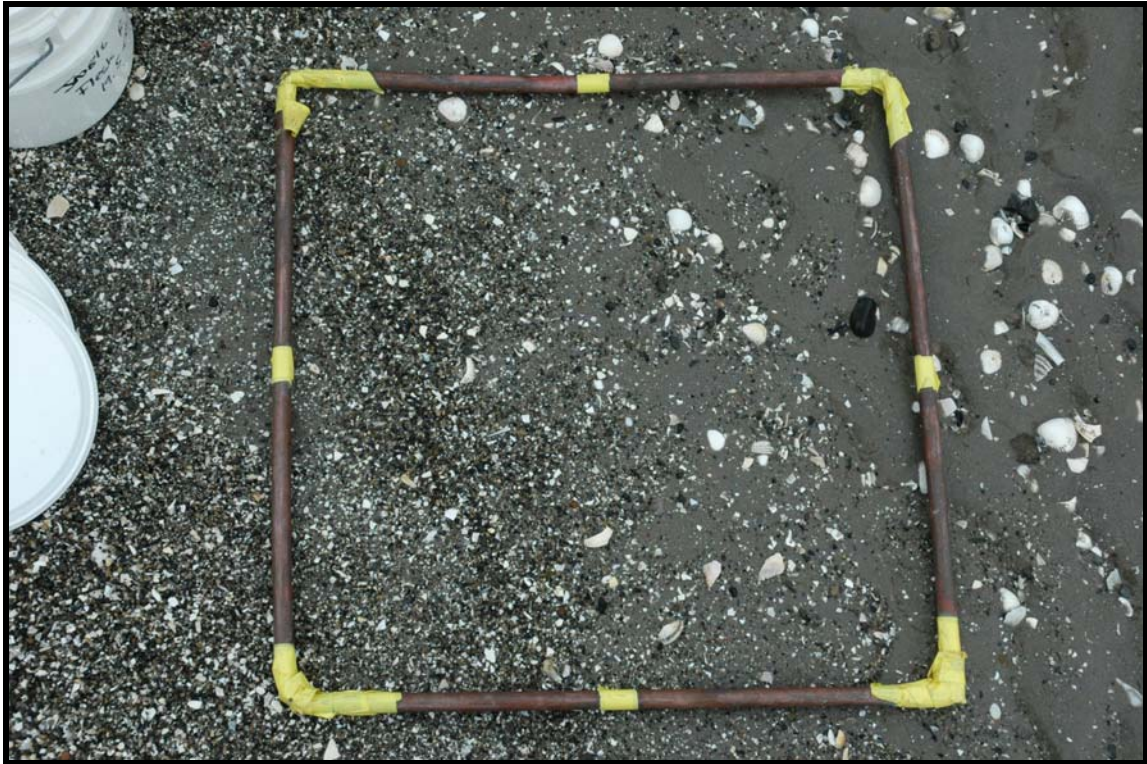
Number of taxa: 10

Station description:

Sediment in this upper shore station was characterised by fine sands (80.01%) with a high content of broken shell fraction on the top layer. A shallow redox layer (<1cm) over an anoxic sediment with a light sulphuric smell was recorded. After faunal analysis of the sediment samples, 10 different taxa were reported. 9 out of the total were annelids (8 polychaetes and 1 oligochaete) and 1 was a bivalve (*Angulus tenuis*).

Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.3.2.** Transect1. Station 1. Upper shore. South Dublin Bay, Co. Dublin.

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### Site No.3 South Dublin Bay, Co. Dublin

#### Transect 1

##### Station 2. Mid shore

Location: 53° 19.517' N, 06° 12.000' W

Distance from High Water: 350m

Height above Low Water: 1.4m

Main sediment type: fine sands

Fauna recorded

Taxon name	Core	Dig	Observed
<i>Eteone longa</i>	8	-	-
<i>Mysta picta</i>	4	-	-
<i>Nephtys cirrosa</i>	4	A	-
<i>Scoloplos armiger</i>	24	A	-
Spionidae sp.	8	-	-
<i>Pygospio elegans</i>	48	A	-
<i>Capitellides giardi</i>	4	-	-
<i>Arenicola marina</i>	-	-	A
Terebellidae indet.	4	-	-
<i>Lanice conchilega</i>	4	A	A
<i>Pontocrates arenarius</i>	4	-	-
<i>Bathyporeia pelagica</i>	4	-	-
<i>Cerastoderma edule</i>	-	C	C
<i>Angulus tenuis</i>	16	C	-
<i>Ophiura albida</i>	4	-	-

Number of taxa: 15

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	O
<i>Ulva lactuca</i>	R

Number of taxa: 2



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Station description:

The station was located on a flat, rippled sandflat with patchy cover of *Enteromorpha* spp. and *Ulva lactuca*. Casts of *Arenicola marina* were abundant (approximately 10/m<sup>2</sup>) with siphon holes of *Cerastoderma edule* and some *Lanice conchilega* tubes also observed. The faunal analysis reported 15 different taxa present in the sediment samples, mainly polychaetes (10 taxa) but also amphipods, bivalves (*Angulus tenuis*) and echinoderms (*Ophiura albida*).

Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.3.3.** Transect 1. Station 2. Mid shore. Site No. 3 South Dublin Bay, Co. Dublin.

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**Site No.3 South Dublin Bay, Co. Dublin**

**Transect 1**

Station 3. Lower shore

Location: 53° 19.583' N, 06° 11.100' W

Distance from High Water: 600m

Height above Low Water: 0m

Main sediment type: fine sands

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Sigalion squamosus</i>	3	-	-
Spionidae	-	C	C
<i>Spio decorata</i>	8	-	-
Maldanidae	-	C	C
<i>Arenicola marina</i>	-	-	C
<i>Owenia fusiformis</i>	-	O	O
<i>Lanice conchilega</i>	4	C	C
<i>Tubificoides benedii</i>	4	-	-
<i>Microprotopus maculatus</i>	3	-	-
<i>Cerastoderma edule</i>	-	C	C
<i>Spisula subtruncata</i>	4	A	-
<i>Angulus tenuis</i>	8	C	-
<i>Donax vittatus</i>	4	A	-

Number of taxa: 13

Flora recorded:

<b>Taxon name</b>	<b>Observed</b>
<i>Enteromorpha</i> sp.	O

Number of taxa: 1

Station description:

The area consisted of rippled compact sands (68.21% fine sand) with a shallow redox layer of less than 2cm covered by a thin mat of *Enteromorpha* spp., *Arenicola marina* casts (5/m<sup>2</sup>) and some polychaete tubes of spionids, maldanids, *Owenia fusiformis* and *Lanice conchilega*. Common cockle *Cerastoderma edule* was observed both through its siphon

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burrows and directly from the dug up area. 13 macroinvertebrate taxa were recorded in the sediment samples, polychaetes being less diverse than in the previous stations but with a higher presence of bivalve species.

#### Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.3.4.** Transect 1. Station 3. Lower shore. Site No. 3 South Dublin Bay, Co. Dublin.

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### Site No.3 South Dublin Bay, Co. Dublin

#### Transect 2

Location: Merrion Strand, 1km north of Blackrock.

Date: 12.07.06

Transect starting point: 53° 18.22' N, 06° 11.08' W

Exposure: Sheltered

Sediment grain size and organic carbon content:

	<b>T2 S1</b>	<b>T2 S2</b>	<b>T2 S3</b>
<b>Merrion Transect 2</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	13.4	6.34	6.27
Coarse sand	0.11	0.63	0.5
Medium sand	24.72	3.77	2.44
Fine sand	58.82	73.49	72.82
Very fine sand	2.95	15.77	18
Silt	0	0	0
Total Organic Carbon (%C)	0.08	0.11	0.12

#### Site description:

The survey area was located in the southeastern end of Merrion Strand, approximately 2km south of transect 1. The transect was laid out across the strand, starting 5m from the stonewall and extending on an easterly direction until reaching the waterline. The sediments ranged from medium-fine sand on the upper shore to fine-very fine sands on the mid and lower shore. Mussels *Mytilus edulis* and barnacles *Semibalanus* sp. and *Balanus* sp were also recorded attached to the stone wall and the rocks on the upper littoral subzone. Talitrid amphipods were absent from the strand line. The ground gently sloped down to low water. A mat of *Enteromorpha* covered the sediment and *Arenicola marina* casts were visible on the surface along with *Ensis ensis* siphons and *Lanice conchilega* tubes.



**Figure 3.3.3.** Transect 2 profile. Site No. 3 South Dublin Bay, Co. Dublin.

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## Site No.3 South Dublin Bay, Co. Dublin

### Transect 2

#### Strand line

Flora recorded

Taxon name	Observed
<i>Enteromorpha</i> sp.	A
<i>Fucus ceranoides</i>	A
<i>Semibalanus balanoides</i>	A
<i>Mytilus edulis</i>	A

Number of taxa: 1

#### Station description

The strand was backed by the ca.3m high stone wall that runs along the DART line. The high water mark was recorded on the stonewall ca.1m above the ground, where the barnacle band ended. A band of *Fucus ceranoides* and *Enteromorpha* sp. was present on the upper eulittoral, starting 1m above the ground and ending at the base of the wall. Mussels *Mytilus edulis* and barnacles *Semibalanus balanoides* were the only fauna observed. Therefore, no strand line was recorded on the sediment and no talitrid amphipods were present.



**Photo 3.3.5.** View of the littoral fringe from the Dart protection wall. Transect 2, Merrion Strand. South Dublin Bay.



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**Site No.3 South Dublin Bay, Co. Dublin**

**Transect 2**

Station 1. Upper shore

Location: 53° 18.367'N, 06° 11.133'W

Distance from High Water: 5m

Height above Low Water: 2.84m

Main sediment type: medium to fine sand.

Fauna recorded: no fauna

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	C

Number of taxa: 1

Station description

The sediment consisted of medium sand (24.72%) and fine sand (58.82%) covered by mats of green filamentous algae *Enteromorpha* sp.



**Photo 3.3.4.** Transect 2. Station 1. Upper shore. Site No. 3 South Dublin Bay, Co. Dublin.

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## Site No.3 South Dublin Bay, Co. Dublin

### Transect 2

#### Station 2. Mid shore

Location: 53° 18.433'N, 06° 10.850' W

Distance from High Water: 280m

Height above Low Water: 1.52m

Main sediment type: fine sand

Fauna recorded:

Taxon name	Core	Dig	Observed
Baetidae sp.	4	-	-
<i>Scoloplos armiger</i>	4	C	-
<i>Spio decorata</i>	15	-	-
<i>Arenicola marina</i>	-	-	C
<i>Lanice conchilega</i>	-	-	C
<i>Cylichna cylindracea</i>	8	-	-
<i>Mysella bidentata</i>	4	-	-
<i>Angulus tenuis</i>	60	A	-
<i>Ophiura albida</i>	4	-	-

Number of taxa: 9

#### Station description.

Fine sand (73.49%) with ripples and shallow redox layer. *Arenicola marina* casts and *Lanice conchilega* tubes were present at densities of 1-5/m<sup>2</sup>. Few taxa were recorded in the sediment samples, with the commonest being the bivalve *Angulus tenuis*.

#### Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.3.5.** Transect 2. Station 2. Mid shore. Site No. 2 South Dublin Bay, Co. Dublin.

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**Site No.3 South Dublin Bay, Co. Dublin**

**Transect 2**

Station 3. Lower shore

Location: 53° 18.550' N, 06° 10.283' W

Distance from High Water: 630m

Height above Low Water: 0m

Main sediment type: fine rippled sand

Fauna recorded

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Sigalion mathildae</i>	3	-	-
<i>Nephtys</i> sp.	-	A	-
<i>Nephtys cirrosa</i>	4	-	-
<i>Spio decorata</i>	16	-	-
<i>Capitellides giardi</i>	2	-	-
<i>Arenicola marina</i>	-	-	A
<i>Lanice conchilega</i>	1	-	A
Ampeliscidae indet.	1	-	-
<i>Bathyporeia</i> sp.	2	-	-
<i>Echinogammarus marinus</i>	3	-	-
<i>Bodotria scorpioides</i>	4	-	-
<i>Pseudocuma longicornis</i>	4	-	-
<i>Crangon crangon</i>	4	-	-
<i>Ensis ensis</i>		-	C
<i>Angulus tenuis</i>	8	C	-
<i>Chamelea gallina</i>	4	-	-

Number of taxa: 16

Flora recorded:

<b>Taxon name</b>	<b>Observed</b>
<i>Enteromorpha</i> sp.	A
Phaeophyceae sp.	O

Number of taxa: 1

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Station description:

The surface of the sediment was very fine to fine sand (18% and 72.82%) in ripples with a shallow redox layer. Mats of green and brown filamentous algae were recorded. Also present were tubes of *Lanice conchilega*, *Arenicola marina* casts (1-5/m<sup>2</sup>) and *Ensis ensis* siphons.

Macroinvertebrate species found in the sediment samples were up to 13, including polychaetes, amphipods and bivalves.

Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.3.6.** Transect 2. Station 3. Lower shore. Site No. 3 South Dublin Bay, Co. Dublin.



### 3.4 Site 4. Ballyteige Burrow, Co. Wexford



**Figure 3.4.1.** Survey site map indicating location of the intertidal transects. Site No. 4. Ballyteige Burrow, Co. Wexford.



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## Site No.4 Ballyteige Burrow, Co. Wexford

### Transect 1

Location: Strand near Lough, 2km southwest Duncormick, Co. Wexford

Date: 08.06.06

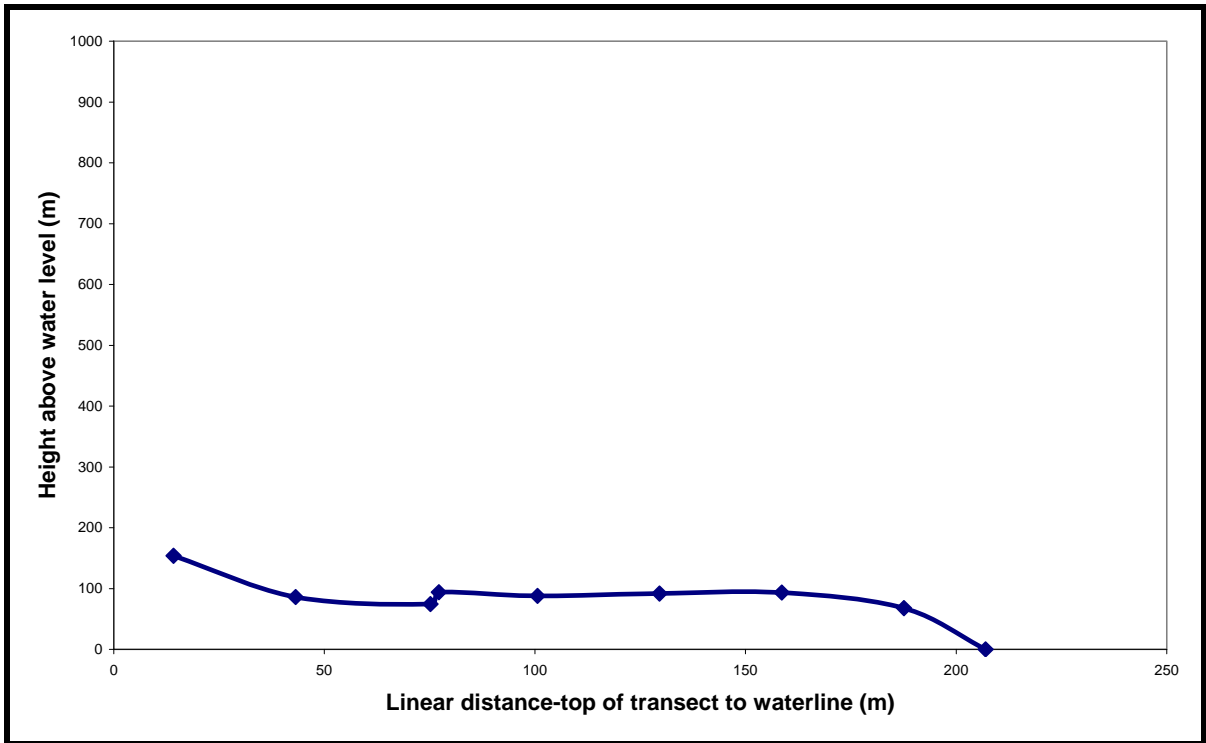
Transect starting point: 52° 13.1138' N, 06° 40.8910' W

Exposure: Extremely sheltered

Sediment grain size and organic carbon content:

<b>Ballyteigue Transect 1</b>	<b>T1 S1 Upper shore</b>	<b>T1S2 Mid shore</b>	<b>T1 S3 Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	0.18	0	0.76
Coarse sand	7	0	1.87
Medium sand	18.19	5.81	33.03
Fine sand	26.24	67.68	59.9
Very fine sand	9.8	19.95	3.68
Silt	38.59	6.56	0.76
Total Organic Carbon (C%)	1.2	0.5	0.09

The site was located on the western end of a long narrow estuary, protected on its southern side by an extensive dune system (Ballyteige Burrow). The transect was taken on a south-westerly direction, starting at the base of a gravelly bank and extending across the muddy gravel flats down to the channel at the centre of the estuary. The sediment gradually changed from mud and gravel, to mud on the mid shore and sand near the lower shore area. Green filamentous algae (*Enteromorpha* spp.) and *Ulva lactuca* were present over extensive sections of the substrate, particularly at the upper and mid shore. Fauna observed during the course of the survey included *Nereis diversicolor* and *Cerastoderma edule*. Talitrid amphipods were observed and collected from the strand line.



**Figure 3.4.2.** Transect 1 profile. Site No. 4 Ballyteige Burrow, Co. Wexford.



**Photo 3.4.1.** View of the shore where Transect 1 was located. Ballyteige Burrow, Co. Wexford.

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## Site No.4 Ballyteige Burrow, Co. Wexford

### Transect 1

#### Strand line

Location: 52° 13.1138'N, 06° 40.8910'W

Distance from High Water: 0m

Height above Low Water: 1.54m

Main sediment type: gravel

Fauna recorded:

Taxon name	Dig	Observed
<i>Talitrus saltator</i>	A	A

Number of taxa: 1

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	A
<i>Ulva lactuca</i>	A

Number of taxa: 2

Station description:

The area above the high water mark consisted of gravel and mud, with dried fucoids marking and patches of green algae *Enteromorpha* sp. and *Ulva lactuca*. Talitrid amphipods were abundant under the dried fucoids. Some specimens were collected.

Biotope

Similar to 'LS.Lsa.St.Tal Talitrids in the upper shore and strand line' described by JNCC Marine Habitat Classification system (Connor *et al.*, 2004).

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**Site No.4 Ballyteige Burrow, Co. Wexford****Transect 1**Station 1. Upper shore

Location: 52° 13.1055'N, 06° 10.9040'W

Distance from High Water: 43m

Height above Low Water: 0.86m

Main sediment type: muddy coarse sand

Fauna recorded

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
Tipula sp.	1	O	-
Nematoda sp.	85	-	-
<i>Eteone longa</i>	33	-	-
<i>Anaitides mucosa</i>	2	-	-
<i>Hediste diversicolor</i>	61	A	-
<i>Malacoceros fuliginosus</i>	2	-	-
<i>Pygospio elegans</i>	128	-	-
<i>Spio</i> sp.	2	-	-
<i>Streblospio shrubsolii</i>	5	-	-
<i>Ampharete</i> sp.	1	-	-
<i>Tubificoides benedii</i>	929	-	-
<i>Chaetogammarus marinus</i>	12	A	-
<i>Paragnathia formica</i>	1	-	-
<i>Tanaidae</i> sp.	1	-	-
<i>Liocarcinus</i> sp.	9	-	A
<i>Liocarcinus arcuatus</i>	2	-	-
<i>Lepidochitona cinerea</i>	1	-	-
<i>Lacuna vincta</i>	1	-	-
<i>Parvicardium scabrum</i>	1	-	-
<i>Cerastoderma edule</i>	2	C	C
<i>Abra alba</i>	2	-	-

Number of taxa: 21

---

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	A
<i>Ulva lactuca</i>	A

Number of taxa: 2

#### Station description

The upper shore station was located near the beginning of the mudflat, where a transition from coarse gravel to mud was apparent. Silt was the dominant fraction of the sediment (38.59%) followed by fine sand (26.24%). The sediment surface was covered by a dense mat of *Enteromorpha* sp. and *Ulva lactuca*. *Hediste diversicolor*, *Chatogammarus marinus*, *Tipula* sp. larvae and *Cerastoderma edule* were observed in the dug up area. Faunal analysis of the core samples returned 21 different taxa. The highest densities were of tubificid oligochaetes, followed by high numbers of the brackish water polychaete *Pygospio elegans*. Nematodes and *Hediste diversicolor* were also abundant.

#### Biotope

Not listed by the JNCC Marine Classification system.



**Photo 3.4.2.** Transect 1. Station 1. Upper shore. Site No. 4 Ballyteige Burrow, Co. Wexford.

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**Site No.4 Ballyteige Burrow, Co. Wexford****Transect 1**Station 2. Mid shore

Location: 52° 13.0786' N, 06° 40.9279' W

Distance from High Water: 100 m

Height above Low Water: 0.88m

Main sediment type: fine muddy sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Tipula</i> sp.	1	-	-
Nematoda sp.	2	-	-
<i>Tetrastemma</i> sp.	1	-	-
<i>Eteone longa</i>	8	-	-
<i>Eumida bahusiensis</i>	1	-	-
<i>Glycera tridactyla</i>	1	-	-
<i>Glyphohesione klatti</i>	1	-	-
<i>Hediste diversicolor</i>	1	O	-
<i>Nephtys hombergii</i>	2	O	-
<i>Pygospio elegans</i>	809	S	-
<i>Arenicola marina</i>	-	-	A
<i>Pomatoceros lamarcki</i>	2	-	-
<i>Pomatoceros triqueter</i>	1	-	-
<i>Tubificoides benedii</i>	57	-	-
<i>Achelia echinata</i>	1	-	-
<i>Corophium arenarium</i>	2	O	-
<i>Decapoda larvae</i>	1	-	-
<i>Liocarcinus arcuatus</i>	1	-	-
<i>Lacuna vincta</i>	14	-	-
<i>Cerastoderma edule</i>	-	-	A
<i>Lutraria lutraria</i>	1	-	-
<i>Abra nitida</i>	2	-	-
<i>Abra tenuis</i>	1	-	-

Number of taxa: 23



---

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	0

Number of taxa: 1

#### Station description

Uneven muddy sand characterised the mid shore of the site (67.68% fine sand, 19.95 very fine sand and 6.95% silt). Scattered clumps of *Enteromorpha* spp. were present along with numerous siphon holes of *Cerastoderma edule* and casts of *Arenicola marina* present (20/m<sup>2</sup>). Extremely high numbers of the brackish-water polychaete *Pygospio elegans* (superabundant) characterised the infaunal community at this station. Other species reported included the oligochaete *Tubificoides benedii* and the gastropod *Lacuna vincta*, which were the second and the third most abundant species recorded from the cores. All the fauna present at this station included species that are commonly found in estuarine mudflats.

#### Biotope

Not listed by the JNCC Marine Classification system.



**Photo 3.4.3** Transect 1. Station 2. Mid shore. Site No. 4 Ballyteige Burrow, Co. Wexford.

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**Site No.4 Ballyteige Burrow, Co. Wexford**

**Transect 1**

Station 3. Lower shore.

Location: 52° 13.02' N, 06° 40.97' W

Distance from High Water: 207m

Height above Low Water: 0m

Main sediment type: fine to medium sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
Nematoda sp.	4	-	-
Nemertea sp.	7	-	-
Sipuncula sp.	2	-	-
<i>Pygospio elegans</i>	29	-	-
<i>Scolecopsis squamata</i>	2	-	-
<i>Capitella capitata</i>	1	-	-
<i>Arenicola marina</i>		-	C
<i>Tubificoides benedii</i>	4	-	-
<i>Bathyporeia</i> sp.	1	-	-
<i>Bathyporeia sarsi</i>	33	-	-
<i>Corophium arenarium</i>	26	-	-
<i>Eurydice pulchra</i>	2	-	-
<i>Idotea neglecta</i>	1	-	-
<i>Eudorella truncatula</i>	3	-	-
<i>Cerastoderma edule</i>	-	-	C
<i>Angulus tenuis</i>	1	-	-

Number of taxa: 16

Flora recorded:

<b>Taxon name</b>	<b>Observed</b>
<i>Enteromorpha</i> sp.	O

Number of taxa: 1

---

Station description:

Flat compact fine sand (59.9%) and scattered clumps of *Enteromorpha* sp. characterised the lower shore. The faunal analysis results obtained from the core samples were poorer than in previous stations, with estuarine species of amphipod crustaceans dominating the samples followed by *Pygospio elegans*, found this time in lower densities than in the mid and upper stations.

Biotope

Not listed by the JNCC Marine Classification system.



**Photo 3.4.4** Transect 1. Station 3. Lower shore. Site No. 4 Ballyteige Burrow, Co. Wexford.

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**Site No.4 Ballyteige Burrow, Co. Wexford**

**Transect 2**

Location: 2km south of Duncormick

Date: 08.06.06

Transect starting point: 52° 12.7360'N, 06° 38.9395'W

Exposure: sheltered

Sediment grain size and organic carbon content:

	<b>T2 S1</b>	<b>T2 S2</b>	<b>T2 S3</b>
<b>Ballyteigue Transect 2</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	0.17	0	0
Coarse sand	5.89	0	0
Medium sand	21.2	3.29	7.95
Fine sand	40.13	51.76	69.26
Very fine sand	12.14	27.93	15.43
Silt	20.47	17.02	7.36
Total Organic Carbon (C%)	0.4	0.59	0.09

Site description:

The second transect was located south of Duncormick, on a sheltered location in the inner section of Duncormick Estuary. The shore profile started at the rock and boulder protection wall in the upper shore and ending in the channel crossing the estuary from east to west, near the centre of Ballyteige Burrow.

The area surveyed consisted of fine muddy sands covered by mats of *Enteromorpha* sp. and *Ulva lactuca*. Talitrids were present in the upper shore and some specimens were collected. Numerous casts of the lugworm *Arenicola marina* were observed. Other species present included bivalves of the genus *Abra*, numerous spionids and gammaridean amphipods.



**Figure 3.4.3.** Transect 2 profile. Site No.4 Ballyteige Burrow, Co. Wexford.



**Photo 3.4.5.** Transect 4. View from top shore. Site No. 4 Ballyteige Burrow, Co. Wexford.



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## Site No.4 Ballyteige Burrow, Co. Wexford

### Transect 2

#### Strand line

Location: 52° 12.7360'N, 06° 38.9395'W

Distance from High Water: 0m

Height above Low Water: 0.72m

Main sediment type: fine sand

Fauna recorded:

Taxon name	Dig	Observed
<i>Talitrus saltator</i>	A	A

Number of taxa: 1

#### Station description

The upper littoral fringe extended from the breakwater that backs most of the strand to the high water mark located ca.1m down. Talitrid amphipod burrows were present in the strand line and some specimens were collected.

#### Biotope

Similar to 'LS.Lsa.St.Tal Talitrids in the upper shore and strand line' described by the JNCC Marine Habitat Classification system (Connor *et al.*, 2004).



**Photo 3.4.6.** View of the strand line in Transect 2. Ballyteige Burrow, Co. Wexford.



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## Site No.4 Ballyteige Burrow, Co. Wexford

### Transect 2

#### Station 1. Upper Shore

Location: 52° 12.7288' N, 06° 38.9472' W

Distance from High Water: 12.2m

Height above Low Water: 0.37m

Main sediment type: fine sand and mud

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Tipula</i> sp.	1	-	-
Tipulidae Sp.	1	-	-
Nematoda sp.	3	-	-
<i>Eteone longa</i>	1	-	-
<i>Hediste diversicolor</i>	21	C	-
<i>Pygospio elegans</i>	3	-	-
<i>Streblospio shrubsolii</i>	1	-	-
<i>Heteromastus filiformis</i>	1	-	-
<i>Arenicola marina</i>	-	-	A
<i>Tubificoides benedii</i>	35	-	-
<i>Perioculodes longimanus</i>	1	-	-
<i>Corophium arenarium</i>	1015	S	S
<i>Cerastoderma edule</i>	-	-	A
<i>Abra</i> sp.		C	
<i>Abra tenuis</i>	5	-	-
<i>Mya arenaria</i>	1	-	-

Number of taxa: 16

#### Station description

Located 10m down from the boulders of shore protection wall, the upper shore station was characterised by flat fine muddy sand (40.13% fine sand, 12.14% very fine sand and 20.47% silt) with abundant siphon holes of common cockle *Cerastoderma edule* and casts of *Arenicola marina* (10-15/m<sup>2</sup>) on the substrate surface. The estuarine amphipod *Corophium arenarium* was the most abundant species recorded at this station.

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Biotope

Similar to 'LS.Lmu.Uest.Hed.Cvol *Hediste diversicolor* and *Corophium volutator* in littoral mud' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.4.7.** Transect 2. Station 1. Upper shore. Site No.4 Ballyteige Burrow, Co. Wexford.

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**Site No.4 Ballyteige Burrow, Co. Wexford**

**Transect 2**

Station 2. Mid shore

Location: 52° 12.68' N, 06° 39.07' W

Distance from High Water: 128m

Height above Low Water: 0.41m

Main sediment type: fine sand and mud

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Tipula</i> sp.	2	-	-
Nematoda sp.	5	-	-
Nemertea sp.	1	-	-
<i>Eteone longa</i>	9	-	-
<i>Hediste diversicolor</i>	1	O	-
<i>Nephtys</i> sp.	-	C	-
<i>Nephtys hombergii</i>	1	-	-
<i>Pygospio elegans</i>	320	A	-
<i>Heteromastus filiformis</i>	6	-	-
<i>Arenicola marina</i>	3	-	A
<i>Tubificoides benedii</i>	193	-	-
<i>Corophium arenarium</i>	17	-	-
<i>Lacuna vincta</i>	2	-	-
<i>Cerastoderma edule</i>	4	C	A
<i>Macoma balthica</i>	9	C	
<i>Abra</i> sp.	-	C	-
<i>Abra nitida</i>	3	-	-
<i>Scrobicularia plana</i>	7	C	-

Number of taxa: 18

Flora recorded:

<b>Taxon name</b>	<b>Observed</b>
<i>Enteromorpha</i> sp.	R
<i>Ulva lactuca</i>	R

Number of taxa: 2

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### Station description

The mid shore consisted of uneven fine muddy sand with a redox layer 2 to 3 cm deep. Fine sand and very fine sand made up 51.76% and 27.93% of the sediment while silt constituted 17.02%. *Enteromorpha* spp. and *Ulva lactuca* on the surface. *Arenicola marina* casts were present at densities of 20-30/m<sup>2</sup>. Other fauna observed included *Abra albra* and *Cerastoderma edule* siphon holes. The estuarine polychaete *Pygospio elegans* and the oligochaete *Tubificoides benedii* were the dominant species in the core samples. The soft-bottom community recorded at this station also included other estuarine macroinvertebrates such as *Corophium arenarium*, *Macoma balthica*, *Scrobicularia plana* and *Heteromastus filiformis*.

### Biotope

Not listed by the JNCC Marine Classification system.



**Photo 3.4.8.** Transect 4. Station 2. Mid shore. Site No. 4 Ballyteige Burrow, Co. Wexford.

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**Site No.4 Ballyteige Burrow, Co. Wexford**

**Transect 2**

Station 3. Lower shore

Location: 52° 12.63' N, 06° 39.17' W

Distance from High Water: 333m

Height above Low Water: 0m

Main sediment type: fine sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
Nematoda sp.	1	-	-
<i>Pygospio elegans</i>	61	A	-
<i>Arenicola marina</i>	-	-	C
<i>Tubificoides benedii</i>	2	-	-
<i>Bathyporeia sarsi</i>	1	-	-
<i>Corophium arenarium</i>	5	-	-
<i>Cerastoderma edule</i>	-	-	O

Number of taxa: 7

Flora recorded:

<b>Taxon name</b>	<b>Observed</b>
<i>Enteromorpha</i> sp.	R

Number of taxa: 1

**Station description**

The lower shore area consisted of fine compact sand (69.26%) with a hypoxic layer located approximately 5cm below the sediment surface. Some sparse *Enteromorpha* spp. and *Ulva lactuca* were recorded along with *Arenicola marina* casts (5-10/m<sup>2</sup>). The results of the sediment samples faunal analysis were poor, reporting only 5 different taxa. The dominant species was the spionid polychaete *Pygospio elegans*, 61 specimens were recorded in the core samples and high densities of its tubes were observed from the dig.

**Biotope**

Not listed listed by the JNCC Marine Classification system.





**Photo 3.4.9.** Transect 2. Station 3. Close-up image of the 1m<sup>2</sup> dug over area in the lower shore. Site No. 4 Ballyteige Burrow, Co. Wexford.



**Photo 3.4.10.** Transect 2. Station 3. Lower shore. Ballyteige Burrow, Co. Wexford.



### 3.5 Site 5. Great Island Channel, Co. Cork.



Figure 3.5.1. Map showing the survey area in Site No. 5 Great Island Channel, Co. Cork.

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**Site No. 5 Great Island Channel, Co. Cork****Transect 1**

Location: Ballyvodock West, Ballynacorra River Estuary.

Date: 14.07.06 (general shore observations) and 03.10.06 (boat survey and grab sampling)

Transect starting point: 51° 53.280'N, 08° 12.540'W

Exposure: ultra sheltered

Sediment grain size and organic carbon content:

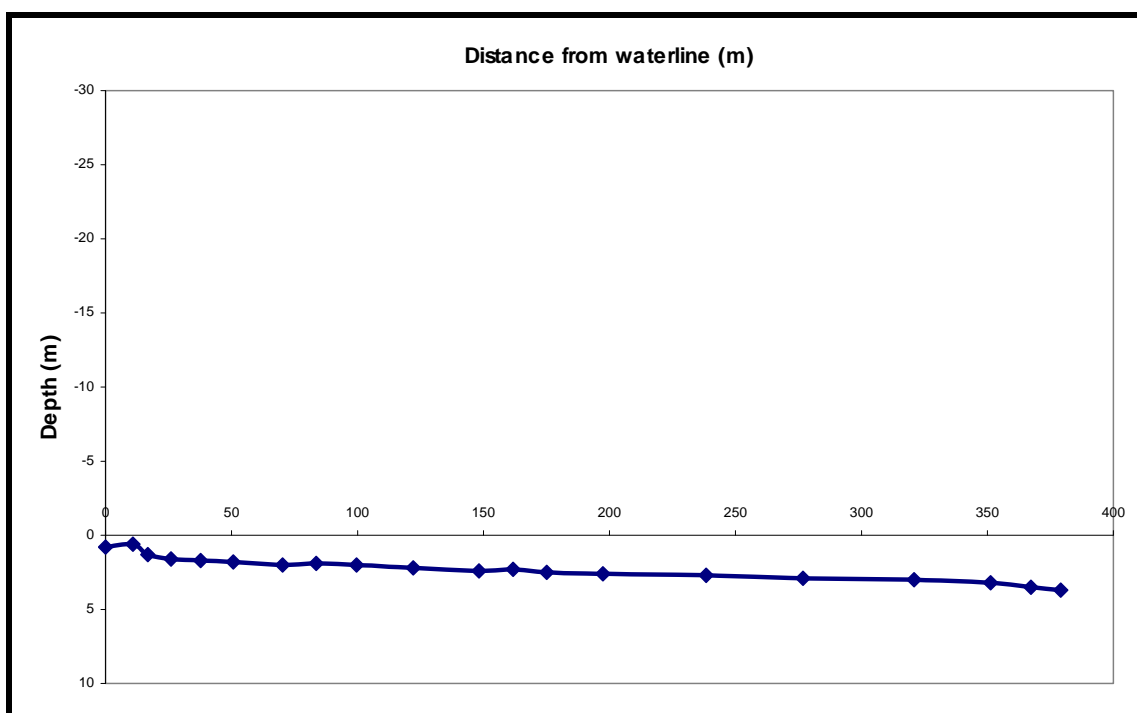
	<b>T1S1</b>	<b>T1S2</b>	<b>T1S3</b>
<b>Cork Transect 1</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	2.77	3.8	1.98
Coarse sand	5.56	7.7	2.48
Medium sand	0.72	2.69	16.63
Fine sand	8.61	6.74	31.86
Very fine sand	12.13	9.44	8.02
Silt	70.21	69.63	39.03
Total Organic Carbon (C%)	1.75	1.75	1.21

**Site description**

The site was located on the mudflats opposite the northeast corner of Great Island, near Ballynacorra River, County Cork. The nature of the area, with deep, soft muds made walking access to the shore impossible but some observation were made from the grass verges located near the top of the shore. An inflatable boat was therefore used. Nevertheless, the main features of the area were described from the top of the shore in the most accurate possible way. All sediment samples at the upper, mid and lower shore were taken from the inflatable boat by means of a small Van Veen grab (0.025 m<sup>2</sup> sampling area) and a geo-referenced acoustic bathymetry plot substituted the shore levels taken using the surveyor's level and staff. Additionally, an area of 1m<sup>2</sup> was grab sampled and observations of the infauna present in the sediment were made on the boat. No underwater photographs could be taken due to the poor visibility conditions dominant at the time of the survey. The first 17m of the top shore consisted of gravel and stones over compact mud. Some amphipods were observed. Bare gravel and stones followed for ca. 30 cm. followed by a band of *Fucus ceranoides* (ca.50 cm wide), covering 30% of the substrate surface which consisted mainly

of gravel and stones. *Ascophyllum nodosum* gradually substituted the *Fucus ceranoides* band, extending for the next 15m, covering 80% of the shore surface. *Fucus vesiculosus* was recorded at the end of the *Ascophyllum* band and finally it replaced the latter as the dominant algal species. Beyond the *Fucus vesiculosus* band, a mudflat with some *Enteromorpha* sp. and *Ulva lactuca* extended towards the channel. Talitrid amphipods were absent from the upper shore. Some casts of *Arenicola marina*, limpets and barnacles on rocks were recorded.

The faunal assemblage recorded from the grab samples included species common in estuarine, soft-bottom conditions such as tubificid oligochaetes, the polychaetes *Hediste diversicolor*, *Streblospio shrubsolii* and *Aphelochaeta marioni* and the bivalves *Macoma balthica*.



**Figure 3.5.2.** Transect 1 profile. Site No. 5 Great Island Channel, Co. Cork.

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## Site No. 5 Great Island Channel, Co. Cork

### Transect 1

#### Station 1 Upper Shore

Location: 51° 53.289'N, 08° 12.572'W

Distance from High Water: 37.7m

Depth: 1.7m

Main sediment type: mud

Fauna recorded:

Taxon name	Grab	Dig	Observed
<i>Hediste diversicolor</i>	4	A	-
<i>Nephtys</i> sp.	-	A	
<i>Nephtys hombergii</i>	3	-	-
<i>Streblospio shrubsolii</i>	2	-	-
<i>Aphelochaeta marioni</i>	4	-	-
<i>Arenicola marina</i>	-	-	C
Oligochaeta sp.	9	-	-
<i>Tubificoides</i> sp.	43	-	-
<i>Tubificoides benedii</i>	5	-	-
<i>Macoma balthica</i>	1	-	-

Number of taxa: 10

#### Station description

The sediment samples consisted of anoxic muds (70.21% silt). Common *Arenicola marina* casts were observed on the sediment surface. The grab samples were dominated by tubificid oligochaetes and polychaetes such as *Hediste diversicolor*. A total of 8 different taxa were identified during the taxonomic analysis of the samples, including several unidentified tubificid oligochaetes.

#### Biotope

Similar to 'LS.Lmu.Uest.Hed.Str *Hediste diversicolor* and *Streblospio shrubsolii* in littoral sandy mud' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).

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**Site No. 5 Great Island Channel, Co. Cork**

**Transect 1**

Station 2 Mid Shore

Location: 51° 53.223'N, 08° 12.555' W

Distance from High Water: 161.8m

Depth: 2.3m

Main sediment type: mud

Fauna recorded:

<b>Taxon name</b>	<b>Grab</b>	<b>Dig</b>	<b>Observed</b>
<i>Hediste diversicolor</i>	5	A	-
<i>Nephtys</i> sp.	-	A	-
<i>Nephtys hombergii</i>	9	-	-
<i>Polydora cornuta</i>	1	-	-
<i>Pygospio elegans</i>	4	-	-
<i>Streblospio shrubsolii</i>	2	-	-
<i>Aphelochaeta marioni</i>	14	A	-
<i>Arenicola marina</i>	-	-	C
Oligochaeta sp.	3	-	-
<i>Tubificoides</i> sp.	57	-	-
<i>Corophium arenarium</i>	1	-	-
<i>Angulus tenuis</i>	2	-	-

Number of taxa: 12

Station description

The muddy substrate (69.63% silt) in this station held a faunal assemblage of which the main components were oligochaetes and polychaetes such as *Hediste diversicolor*, the cirratulid *Aphelochaeta marioni* and the nereid *Nephtys hombergii*. Common *Arenicola marina* casts were observed on the sediment surface.

Biotope

Not listed by the JNCC Marine Classification system.

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**Site No. 5 Great Island Channel, Co. Cork**

**Transect 1**

Station 3 Lower Shore

Location: 51° 53.126'N, 08° 12.522'W

Distance from High Water: 351.2m

Depth: 3.2m

Main sediment type: sandy mud

Fauna recorded

<b>Taxon name</b>	<b>Grab</b>	<b>Dig</b>	<b>Observed</b>
<i>Hediste diversicolor</i>	3	C	-
<i>Nephtys hombergii</i>	3	C	-
<i>Streblospio shrubsolii</i>	2	-	-
<i>Aphelochaeta marioni</i>	17	A	-
<i>Tubificoides</i> sp.	1	-	-
<i>Tubificoides benedii</i>	2	-	-

Number of taxa: 6

Station description

The granulometric analysis of the sediment retrieved from the grab revealed a higher sand component compared to the other two stations (31.86% fine sand, 16.63% medium sand and 39.03% silt). Due to the distance from the top of the shore and the fact that the station was unaccessible by foot, no visual observations of signs of faunal activity (casts, syphon holes, etc) present on the sediment surface were possible. *Aphelochaeta marioni* was the dominant taxa in the grab samples and was also abundant in the 1m<sup>2</sup> area sampled with the Van Veen grab. Additionally, an area of 1m<sup>2</sup> was grab sampled and observations of the infauna present in the sediment were made on the boat. Other fauna recorded, although in much lower numbers included *Nephtys hombergii*, *Hediste diversicolor* and tubificid oligochaetes. The diversity of the faunal community here was lower than in previous stations, with only 6 taxa recorded, all being annelids.

Biotope

Not listed by the JNCC Marine Classification system.



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## Site No. 5 Great Island Channel, Co. Cork

### Transect 2

Location: East of Belvelly. North-East corner of Great Island, Co. Cork.

Date: 14.07.06 (general shore observations) & 03.10.06 (boat survey)

Transect starting point: 51° 52.911' N, 08° 17.345' W

Exposure: ultra sheltered

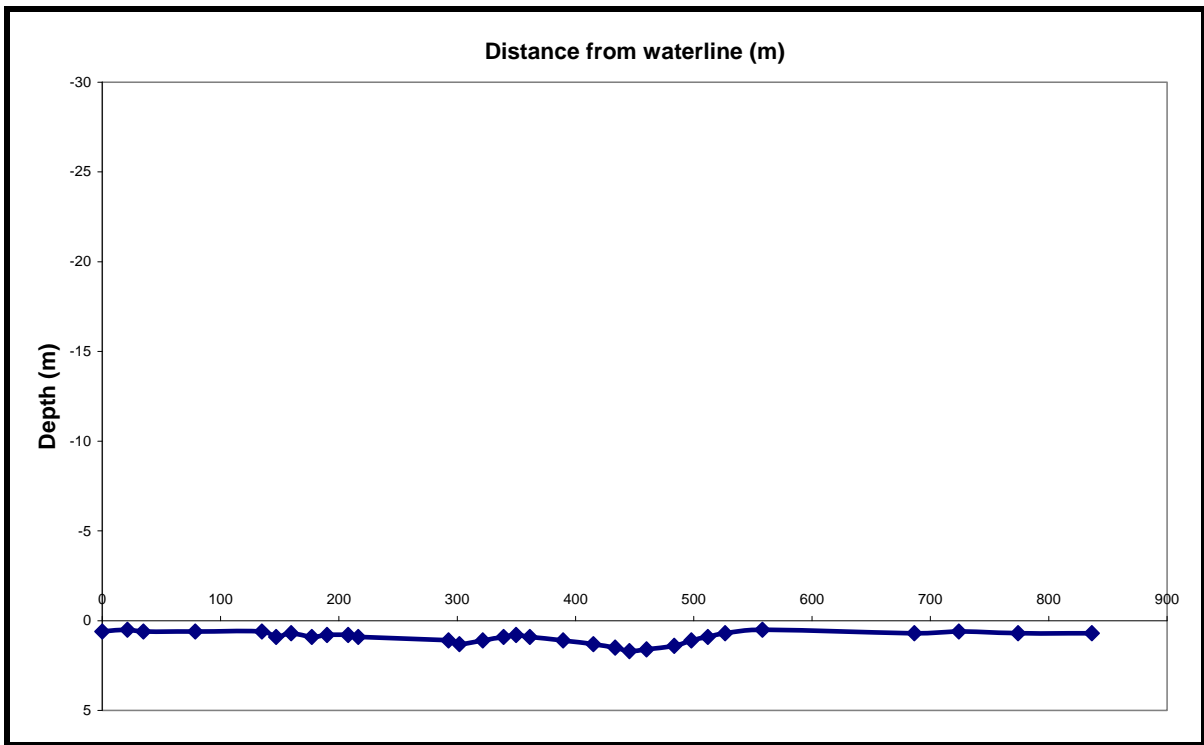
Sediment grain size and organic carbon content

	<b>T2S1</b>	<b>T2S2</b>	<b>T2S3</b>
<b>Cork Transect 2</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very Coarse Sand	0.19	0.25	0
Coarse Sand	3.96	1.63	0
Medium Sand	3.3	0.49	0.98
Fine Sand	8.22	7.21	10
Very Fine Sand	10.52	14.02	12.8
Silt	73.81	76.4	76.22
Total Organic Carbon (C%)	1.67	1.37	1.62

### Site description

The site was located in the mudflats between the north-east shore of Great Island and Foaty Island. As it happened with the first transect in Ballyvodock, the site was inaccessible by foot due to the consistence and depth of the muds. Because of this, samples were collected by boat. All sediment samples at the upper, mid and lower shore were taken by means of a small Van Veen grab (0.025 m<sup>2</sup> sampling area) and a geo-referenced acoustic bathymetry plot substituted the shore levels taken using the surveyor's level and staff. No underwater photographs could be taken due to the poor visibility conditions dominant at the time of the survey.

The shoreline consisted of marshy grassland, dominated by *Spartina anglica* on the upper shore extending ca.150m. No talitrid amphipods were recorded. The *Spartina* marshland gave way to the mudflats, which extended northwards until reaching Belvelly Channel.



**Figure 3.5.3.** Transect 2 profile. Site No. 5 Great Island Channel, Co. Cork.



**Photo 3.5.1.** View of Transect 2 from the road southeast of Belvelly. Great Island Channel, Co. Cork.

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**Site No. 5 Great Island Channel, Co. Cork****Transect 2**Station 1 Upper Shore

Location: 51° 53.906'N, 08° 17.355'W

Distance from High Water: 0m

Depth: 0.6m

Main sediment type: mud

Fauna recorded

<b>Taxon name</b>	<b>Grab</b>	<b>Dig</b>	<b>Observed</b>
<i>Eteone longa</i>	4	-	-
<i>Hediste diversicolor</i>	8	A	-
<i>Neanthes irrorata</i>	2	-	-
<i>Nereis sp.</i>	1	-	-
<i>Nephtys sp.</i>	-	A	-
<i>Nephtys hombergii</i>	12	-	-
<i>Polydora cornuta</i>	1	-	-
<i>Pygospio elegans</i>	1	-	-
<i>Streblospio shrubsolii</i>	31	-	-
<i>Aphelochaeta marioni</i>	83	A	-
<i>Tharyx killarientis</i>	8	-	-
<i>Tubificoides sp</i>	20	-	-
<i>Tubificoides benedii</i>	11	-	-
<i>Anthura gracillis</i>	4	-	-
<i>Tanaididae sp.</i>	1	-	-
<i>Macoma balthica</i>	1	F	-

Number of taxa: 16

## Station description

The dominant fraction of the sediment in upper shore was silt (73.81%) followed by 10.52% fine sand. Due to the distance from the top of the shore and the fact that the station was inaccessible by foot, no visual observations of signs of faunal activity (casts, siphon holes, etc) present on the sediment surface were possible. Species diversity and abundances were moderately high. A total of 15 taxa were recorded from the grab samples. The highest abundances were those of *Aphelochaeta marioni*, *Streblospio shrubsolii* and tubificid oligochaetes. Other polychaetes recorded included *Hediste diversicolor*, *Nephtys hombergii*,

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*Eteone longa*, *Pygospio elegans* and *Polydora cornuta*. Only 2 crustaceans (*Anthura gracilis* and another unidentified tanaid) were recorded from the grab samples. The estuarine bivalve *Macoma balthica* was regarded as frequent in the 1m<sup>2</sup> area sampled with the Van Veen grab although only 1 specimen was identified in the replicate grab samples.

**Biotope**

Not listed by the JNCC Marine Classification system.

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**Site No. 5 Great Island Channel, Co. Cork****Transect 2**Station 2 Mid Shore

Location: 51° 53.060'N, 08° 17.025'W

Distance from High Water: 445.5m

Depth: 1.7m

Main sediment type: mud

Fauna recorded

<b>Taxon name</b>	<b>Grab</b>	<b>Dig</b>	<b>Observed</b>
Nemertea sp.	1	-	-
<i>Eteone longa</i>	9	-	-
<i>Hediste diversicolor</i>	130	S	-
<i>Nereis</i> sp.	1	-	-
<i>Nephtys</i> sp.	-	A	-
<i>Nephtys hombergii</i>	7	-	-
<i>Polydora cornuta</i>	15	-	-
<i>Pygospio elegans</i>	1	-	-
<i>Streblospio shrubsolii</i>	9	-	-
<i>Aphelochaeta marioni</i>	296	S	-
<i>Tharyx killarientis</i>	5	-	-
<i>Ampharete</i> sp.	2	-	-
Oligochaeta sp.	4	-	-
<i>Tubificoides</i>	14	-	-
<i>Tubificoides benedii</i>	5	-	-
<i>Carcinus maenas</i>	1	-	-
<i>Cerastoderma edule</i>	2	C	-
<i>Angulus tenuis</i>	1	-	-
<i>Scrobicularia plana</i>	2	C	-

Number of taxa: 19

## Station description

The sediment of the mid shore consisted of silt (76.4%) and a small fraction of very fine sand (14.02%). Due to the distance from the top of the shore and the fact that the station was unaccessible by foot, no visual observations of signs of faunal activity (casts, syphon holes, etc) present on the sediment surface were possible. Although species diversities

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recorded from the grab samples were moderately high (19 taxa in total), total numbers of individuals were very high including quite a few taxa were regarded as superabundant (*Aphelochaeta marioni* (296 individuals) and *Hediste diversicolor* (130 individuals)) and abundant (*Eteone longa*, *Nephtys* sp., *Nephtys hombergii*). Bivalves recorded included the common cockle *Cerastoderma edule*, *Angulus tenuis* and *Scrobicularia plana*.

#### Biotope

Not listed by the JNCC Marine Classification system.



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**Site No. 5 Great Island Channel, Co. Cork**

**Transect 2**

Station 3 Lower Shore

Location: 51° 53.199'N, 08° 16.750'W

Distance from High Water: 836m

Depth: 0.7m

Main sediment type: mud

Fauna recorded:

<b>Taxon name</b>	<b>Grab</b>	<b>Dig</b>	<b>Observed</b>
<i>Eteone longa</i>	3	-	-
<i>Hediste diversicolor</i>	27	A	-
<i>Nephtys</i> sp.	-	A	-
<i>Nephtys hombergii</i>	7	-	-
<i>Polydora cornuta</i>	3	-	-
<i>Streblospio shrubsolii</i>	10	-	-
<i>Aphelochaeta marioni</i>	165	S	-
<i>Tharyx killarientis</i>	7	-	-
Oligochaeta sp.	18	-	-
<i>Tubificoides</i> sp.	10	-	-
<i>Tubificoides benedii</i>	27	-	-
<i>Macoma balthica</i>	3	F	-
<i>Scrobicularia plana</i>	1	F	-

Number of taxa: 13

Station description

Predominantly muddy (76.22%), the lower shore station was dominated by polychaetes including superabundant *Aphelochaeta marioni* (165 individuals) and abundant *Hediste diversicolor*, *Nephtys* sp. and *Nephtys hombergii*. Bivalves present included *Macoma balthica* and *Scrobicularia plana*.

Biotope

Not listed by the JNCC Marine Classification system.

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## Site No. 5 Great Island Channel, Co. Cork

### Transect 3

Location: North of Foaty Island, Slatty River Channel, Co. Cork

Date: 14.07.06 (shore observations) & 03.10.06 (boat survey)

Transect starting point: 51° 54.000'N, 08° 16.800'W

Exposure: ultra sheltered

Sediment grain size and organic carbon content

	<b>T3S1</b>	<b>T3S2</b>	<b>T3S3</b>
<b>Cork Transect 3</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	1.25	0.11	3.26
Coarse sand	5.45	0.74	3.71
Medium sand	1.05	0.16	2.52
Fine sand	4.91	5.73	6.19
Very fine sand	8.99	12.01	8.71
Silt	78.35	81.25	75.61
Total Organic Carbon (C%)	2.18	2.11	2.06

### Site description

The site was located in a narrow, very sheltered tidal inlet north of Foaty Island. The area consists of soft muds extending across the passage where the River Slatty flows. A stone and concrete protection wall was located on the norther side of the channel. The lichen *Xanthoria parietina* was present. *Fucus vesiculosus* was recorded on the base of the wall. The deep soft muds made any approach on foot impossible. Therefore the area was studied through visual observations from the rock-concrete wall near Tullagreen. Sediment grab samples were taken at upper, mid and lower shore (on the Slatty River Channel), across the mudflats during high water from an inflatable boat. All sediment samples were taken by means of a small Van Veen grab (0.025 m<sup>2</sup> sampling area) and a geo-referenced acoustic bathymetry plot substituted the shore levels taken using the surveyor's level and staff. No underwater photographs could be taken due to the poor visibilty conditions dominant at the time of the survey. Talitrid amphipods were absent from the upper shore.



**Figure 3.5.4.** Transect 3 profile. Site No. 5 Great island Channel, Co. Cork.

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## Site No. 5 Great Island Channel, Co. Cork

### Transect 3

#### Station 1. Upper shore

Location: 51° 54.314'N, 08° 17.195'W

Distance from High Water: 0m

Depth: 0.8m

Main sediment type: mud

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Eteone longa</i>	8	-	-
<i>Hediste diversicolor</i>	51	A	-
<i>Nereis</i> sp.	2	-	-
<i>Nephtys</i> sp.	1	O	-
<i>Nephtys hombergii</i>	2	-	-
<i>Scoloplos armiger</i>	1	O	-
<i>Polydora cornuta</i>	10	-	-
<i>Streblospio shrubsolii</i>	8	-	-
<i>Aphelochaeta marioni</i>	23	C	-
<i>Aphelochaeta multibranchiis</i>	2	-	-
<i>Oligochaeta</i> sp.	3	-	-
<i>Tubificoides</i> sp	2	-	-
<i>Tubificoides benedii</i>	20	-	-
<i>Crangon crangon</i>	1	-	-
<i>Angulus tenuis</i>	1	-	-
<i>Macoma balthica</i>	2	O	-
<i>Scrobicularia plana</i>	1	O	-

Number of taxa: 17

#### Station description

Sediment in the upper shore consisted of muds (78.35%). No apparent signs of faunal activity were recorded on the sediment surface during visual observations from the top of the shore. Fauna recorded included 17 taxa, the highest recorded abundances being those of *Hediste diversicolor* (51 individuals/0.1m<sup>2</sup>), *Aphelochaeta marioni* (23 individuals), *Tubificoides benedii* (20 specimens) and *Polydora cornuta* (10 individuals).

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Biotope

Not listed by the JNCC Marine Classification system.

**Site No. 5 Great Island Channel, Co. Cork**

**Transect 3**

Station 2. Mid shore

Location: 51° 54.287'N, 08° 17.217'W

Distance from High Water: 61.5 m

Depth: 1.1m

Main sediment type: mud

Fauna recorded

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Hediste diversicolor</i>	3	C	-
<i>Nereis sp.</i>	2	C	-
<i>Nephtys hombergii</i>	3	-	-
<i>Streblospio shrubsolii</i>	30	A	-
<i>Aphelochaeta marioni</i>	18	A	-
<i>Tubificoides benedii</i>	4	-	-

Number of taxa: 6

Station description:

The mid shore consisted of 81.25% silt and a small fraction of very fine sand (12.01%). No apparent signs of faunal activity were recorded on the sediment surface during visual observations from the top of the shore. The macrofauna recorded included 6 different taxa, dominated by the spionid *Streblospio shrubsolii* and the cirratulid *Aphelochaeta marioni*.

Biotope

Similar to 'LS.Lmu.Uest.Hed.Str *Hediste diversicolor* and *Streblospio shrubsolii* in littoral sandy mud' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).

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## Site No. 5 Great Island Channel, Co. Cork

### Transect 3

#### Station 3. Lower shore

Location: 51° 54.258'N, 08° 17.241'W

Distance from High Water: 105.7m

Depth: 0.5m

Main sediment type: mud

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Eteone longa</i>	2	-	-
<i>Hediste diversicolor</i>	80	S	-
<i>Nereis sp.</i>	1	A	-
<i>Nephtys hombergii</i>	11	-	-
<i>Polydora cornuta</i>	2	-	-
<i>Streblospio shrubsolii</i>	10	-	-
<i>Aphelochaeta marioni</i>	16	A	-
<i>Tubificoides sp</i>	2	-	-
<i>Tubificoides benedii</i>	47	-	-
<i>Urothoe elegans</i>	1	-	-
<i>Macoma balthica</i>	2	C	-

Number of taxa: 11

#### Station description

The lower shore consisted of mud (75.61%) and some sand (24.39%). No apparent signs of faunal activity were recorded on the sediment surface during visual observations from the top of the shore. The faunal assemblage consisted of 11 taxa dominated by the ragworm *Hediste diversicolor* with 80 individuals per 0.1m<sup>2</sup> (superabundant according to the SACFOR scale), followed by *Tubificoides benedii*, *Aphelochaeta marioni* and *Streblospio shrubsolii*. The bivalves were represented by *Macoma balthica*.

#### Biotope

Similar to 'LS.LMu.Uest.Hed.Ol *Hediste diversicolor* and oligochaetes in littoral mud' as listed by the JNCC Marine Classification system.



### 3.6 Site 6. Clew Bay Complex, Co. Mayo



**Figure 3.6.1.** Location of areas surveyed in Site No. 6 Clew Bay Complex, Co. Mayo.

Note on the Clew Bay survey procedures:

Prior to carrying out the surveys in the Clew Bay area, it was agreed with NPWS that two sites in the north side of the bay, namely 1a (Inishkeel) and 1b (Inishtubrid), would follow a different sampling procedure than the rest of the sites (that is, one transect across the shore and three sampling stations in the upper, mid and lower intertidal). In these two areas, five sampling stations were randomly selected on the shore using a 0.25m<sup>2</sup> quadrat to obtain 4 core samples covering a total area of 0.1m<sup>2</sup>. An area of 1 m<sup>2</sup> was dug over in order

to obtain a representative image of the sediment conditions and of the in-faunal communities present.



**Figure 3.6.2.** Location of the stations sampled in Sites 1a (Inishkeel-left) and 1b (Inishtubrid-right) in north Clew Bay.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Intertidal sampling area 1a**

Location: sandflats between Rosturk Strand, Inishkeel and Black Rock. North side of Clew Bay.

Date: 09.08.06

Exposure: very sheltered

Sediment grain size and organic carbon content:

<b>Clew Bay Sampling area 1a</b>	<b>Station 1</b>	<b>Station 2</b>	<b>Station 3</b>	<b>Station 4</b>	<b>Station 5</b>
Sediment Type	(%)	(%)	(%)	(%)	(%)
Gravel	0	0	0	0	0
Very coarse sand	1.91	3.94	5.33	6.36	4.37
Coarse sand	7.19	6.77	2.52	2.39	5.17
Medium sand	41.41	40.51	18.05	33.61	28.57
Fine sand	47.87	46.71	66.45	53.99	56.96
Very fine sand	1.62	1.7	7.05	3.3	4.53
Silt	0	0.37	0.6	0.35	0.4
Total Organic Carbon (C%)	0.08	0.13	0.08	0.05	0.07

**Site description**

The survey area was situated on the northern shores of Inner Clew Bay, a very large west facing bay on the west coast of Ireland, in county Mayo. Numerous islands (drumlins) are present in the inner part of the bay creating a series of small sheltered bays and inlets. Site 1a was located on a sheltered area protected by several islands to the south and east and backed by the coastline to the north. The intertidal area comprised extensive sandflats of medium to fine sand with numerous small ripples across its surface. A layer of shelly debris was recorded below the surface layer in Station 5. The redox layer depth varied between stations, being shallow in Station 2 (less than 5cm) and quite deep (more than 20cm) in Stations 3, 4 and 5. Signs of faunal activity included razorshell *Ensis ensis* burrows, *Arenicola marina* casts and *Cerastoderma edule* siphon holes. No talitrid amphipods were observed in the strand line.



**Photo 3.6.1.** View of the strand in Site 1a. Site No. 6 Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Intertidal sampling area 1a**

Station 1

Location: 53° 53.510' N, 09° 42.648' W

Main sediment type: medium to fine sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Eteone longa</i>	1	-	-
<i>Anaitides mucosa</i>	2	-	-
<i>Nephtys</i> sp.	-	C	-
<i>Nephtys cirrosa</i>	2	-	-
<i>Arenicola marina</i>	-	-	A
<i>Travisia forbesii</i>	9	C	-
<i>Urothoe elegans</i>	9	-	-
<i>Liocarcinus arcuatus</i>	1	-	-
<i>Mytilus edulis</i>	1	-	-
<i>Cerastoderma edule</i>	2	C	A
<i>Ensis ensis</i>	-	-	C
<i>Angulus tenuis</i>	16	C	-

Number of taxa: 12

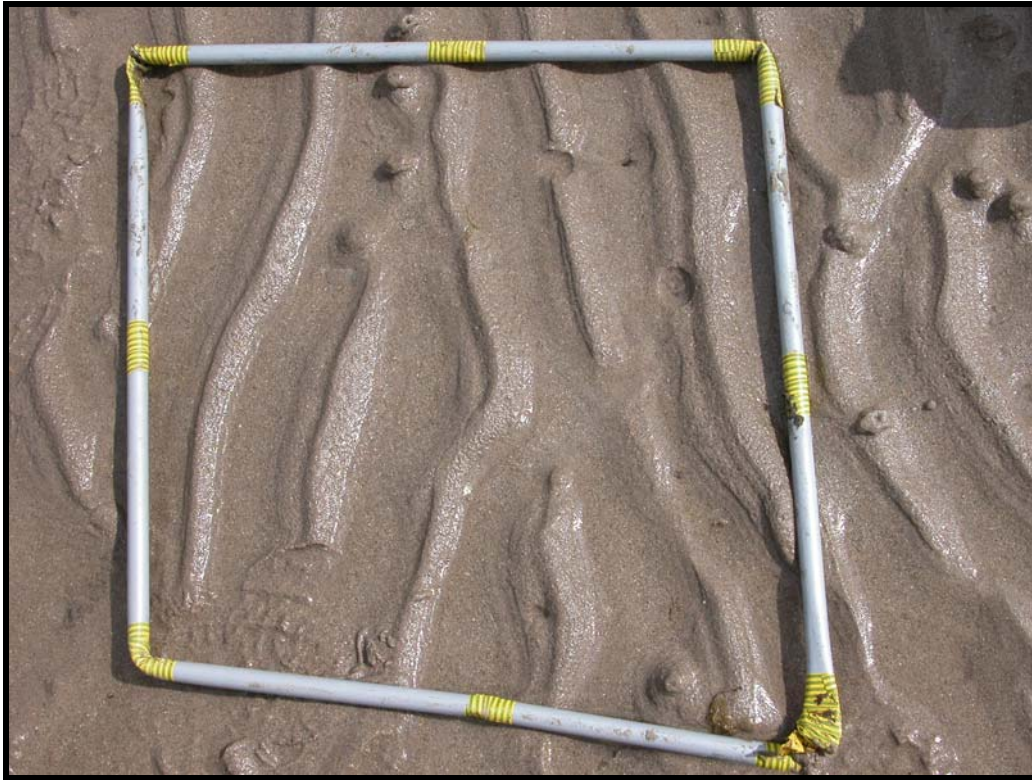
Station description

The substrate consisted of compact rippled sand. Sediment grain size composition was dominated by medium sand (41.41%) and fine sand (47.87%). Redox layer of less than 5cm. Signs of faunal activity included siphon holes of razorshell *Ensis ensis* and common cockle *Cerastoderma edule* as well as feeding casts of the lugworm *Arenicola marina*. The faunal analysis of the core samples reported 9 different taxa, the dominant species being the bivalve *Angulus tenuis* followed by the amphipod *Urothoe elegans* and the polychaete *Travisia forbesii*.

Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).





**Photo 3.6.2.** Site 1a. Station 1. Site No. 6 Clew Bay Complex, Co. Mayo.



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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Intertidal sampling area 1a**

Station 2

Location: 53° 53.741' N, 09° 42.834' W

Main sediment type: medium to fine sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
Nemertea sp.	4	-	-
<i>Glycera tridactyla</i>	1	-	-
<i>Exogone hebes</i>	2	-	-
<i>Nephtys</i> sp.	-	A	-
<i>Nephtys cirrosa</i>	5	-	-
<i>Nephtys hombergii</i>	7	-	-
<i>Orbinia latreillii</i>	6	A	-
<i>Scoloplos armiger</i>	5	A	-
<i>Cirratulus cirratus</i>	9	-	-
<i>Notomastus latericeus</i>	3	F	-
<i>Arenicola marina</i>	1	-	C
Maldanidae sp.	-	C	-
<i>Clymenura borealis</i>	5	-	-
<i>Euclymene oerstedii</i>	2	-	-
<i>Travisia forbesii</i>	4	-	-
<i>Lanice conchilega</i>	1	-	O
<i>Semibalanus balanoides</i>	3	-	-
Amphipoda sp.	-	C	-
<i>Urothoe elegans</i>	7	-	-
<i>Ampelisca brevicornis</i>	8	-	-
<i>Bathyporeia guilliamsoniana</i>	2	-	-
<i>Gammarus duebeni</i>	1	-	-
Decapoda sp.	1	-	-
<i>Crangon crangon</i>	13	C	C
<i>Liocarcinus arcuatus</i>	1	-	-
<i>Mytilus edulis</i>	13	-	O
<i>Lucinoma borealis</i>	1	-	-

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<i>Parvicardium ovale</i>	1	-	-
<i>Cerastoderma edule</i>	2	C	C
<i>Ensis ensis</i>	-	-	C
<i>Angulus tenuis</i>	24	A	-
<i>Thracia phaseolina</i>	1	-	-
Pleuronectidae indet..	-	-	1

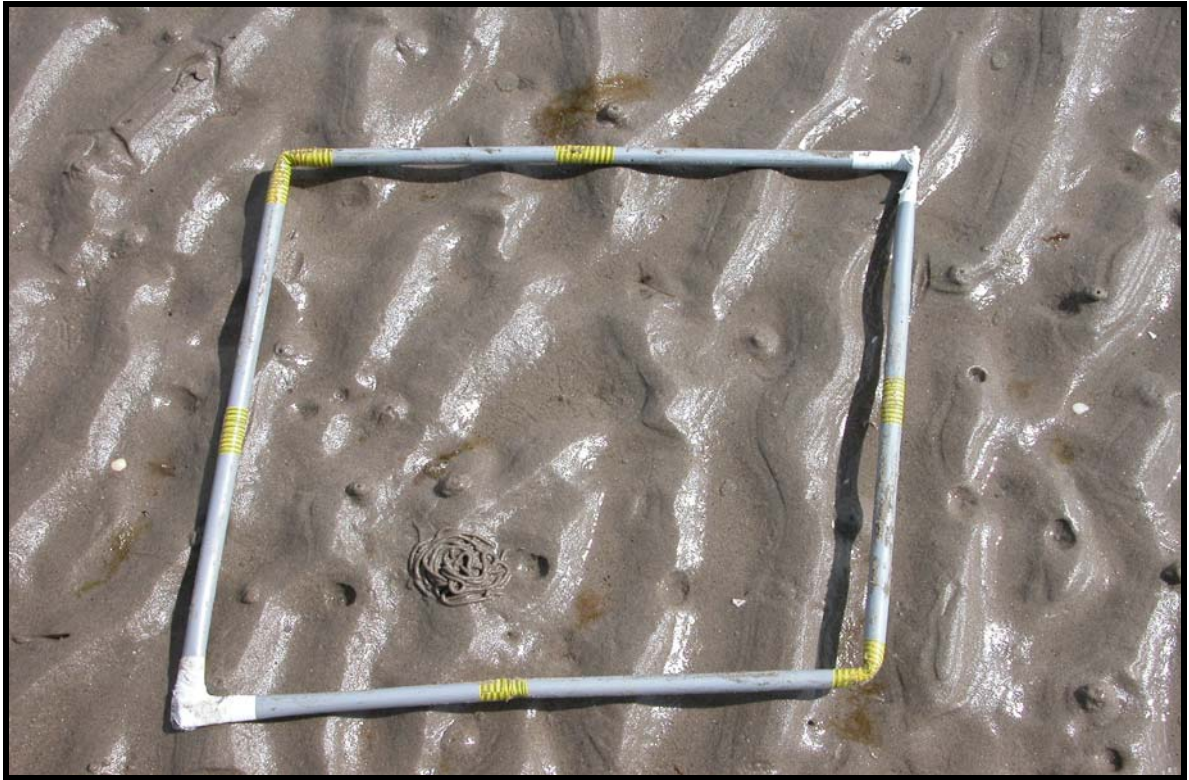
Number of taxa: 33

#### Station description

A mixture of medium sand (40.51%) and fine sand (46.71%) characterised the sediment sampled from this station. The area consisted of rippled flat sand with some silt in the surface and scattered clumps of brown filamentous algae. Redox layer of less than 5cm. Casts of *Arenicola marina*, burrows of *Ensis ensis* and *Cerastoderma edule* and occasional tubes of the sandmason worm *Lanice conchilega* and maldanid polychaetes were the main faunal activity signs. This was the second most diverse station of the whole survey with a total 33 taxa recorded. Species densities were low, the bivalve *Angulus tenuis* being the most abundant of all taxa with 24 specimens recorded from the core samples.

#### Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.6.3.** Site 1a. Station 2. Figure showing compact sand with *Arenicola marina* casts (1-5/m<sup>2</sup>) and *Cerastoderma edule* siphon holes. Site No.6 Clew Bay Complex, Co. Mayo.

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## Site No. 6 Clew Bay Complex, Co. Mayo

### Intertidal sampling area 1a

#### Station 3.

Location: 53° 53.68' N, 09° 42.85' W

Main sediment type: fine sand

Fauna recorded:

Taxon name	Core	Dig	Observed
Nemertea sp.	2	-	-
<i>Nephtys</i> sp.		A	-
<i>Nephtys cirrosa</i>	4		-
<i>Orbinia latreillii</i>	1	F	-
<i>Scoloplos armiger</i>	6	C	-
<i>Notomastus latericeus</i>	1	-	-
<i>Arenicola marina</i>	-	-	C
<i>Praxillura longissima</i>	4	-	-
<i>Cerastoderma edule</i>	-	-	C
<i>Ensis ensis</i>	-	-	F
<i>Angulus tenuis</i>	18	C	-

Number of taxa: 11

#### Station description

This station was characterised by compact fine sand (66.45%), a deep redox layer (more than 20cm) and numerous fine ripples on the surface. Burrows of *Ensis ensis* were frequently observed. Casts of *Arenicola marina* and *Cerastoderma edule* syphon holes were another common sign of faunal activity. A total of 11 different taxa were recorded, the faunal assemblage dominated by *Angulus tenuis* and polychaetes such as *Scoloplos armiger*, *Praxillura longissima* and *Nephtys cirrosa*.

#### Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.6.4.** Station 3. Compact sand with low densities of lugworm *Arenicola marina* and siphon holes of *Cerastoderma edule*. Site No. 6, Clew Bay Complex, Co. Mayo.

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## Site No. 6 Clew Bay Complex, Co. Mayo

### Intertidal sampling area 1a

#### Station 4

Location: 53° 53.59' N, 09° 43.11' W

Main sediment type: medium to fine sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Orbinia latreillii</i>	1	R	-
Maldanidae sp.	-	F	
<i>Praxillura longissima</i>	10	-	-
<i>Arenicola marina</i>	-	-	C
<i>Travisia forbesii</i>	6	F	-
<i>Urothoe brevicornis</i>	1	-	-
<i>Liocarcinus arcuatus</i>	1	-	-
<i>Parvicardium ovale</i>	2	-	
<i>Cerastoderma edule</i>	-	-	A
<i>Ensis ensis</i>	-	-	O
<i>Angulus tenuis</i>	-	O	-

Number of taxa: 11

#### Station description

Sediment consisted of fine to medium compact sand (66.45% fine sand and 18.05% medium sand) with small ripples on the surface. Deep redox layer (more than 20cm). The sediment was characterised by the abundant syphon holes of the common cockle *Cerastoderma edule* and common casts of *Arenicola marina*. Occasional *Ensis ensis* burrows were also observed. Total number of taxa was low (11) with polychaetes such as *Praxillura longissima* and *Travisia forbesii* being the commonest of the 6 species recorded in the cores. As regards to the dug up area, the polychaete annelids *Travisia forbesii* and unidentified maldanids were regarded as frequent while the bivalve *Angulus tenuis* and the polychaete *Orbinia latreilli* were occasional and rare respectively.

#### Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).





**Photo 3.6.5.** Station 4. High densities of burrows of *Cerastoderma edule* ( $60/\text{m}^2$ ) were recorded in this station. Site No. 6, Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Intertidal sampling area 1a**

Station 5

Location: 53° 53.61' N, 09° 43.33' W

Main sediment type: medium to fine sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Nephtys</i> sp.	-	A	-
<i>Nephtys hombergii</i>	3	-	-
<i>Orbinia latreillii</i>	3	C	-
<i>Scoloplos armiger</i>	2	F	-
Maldanidae sp.	-	O	-
<i>Praxillela praetermissa</i>	2	-	-
<i>Carcinus maenas</i>	-	-	P
<i>Angulus tenuis</i>	3	C	-

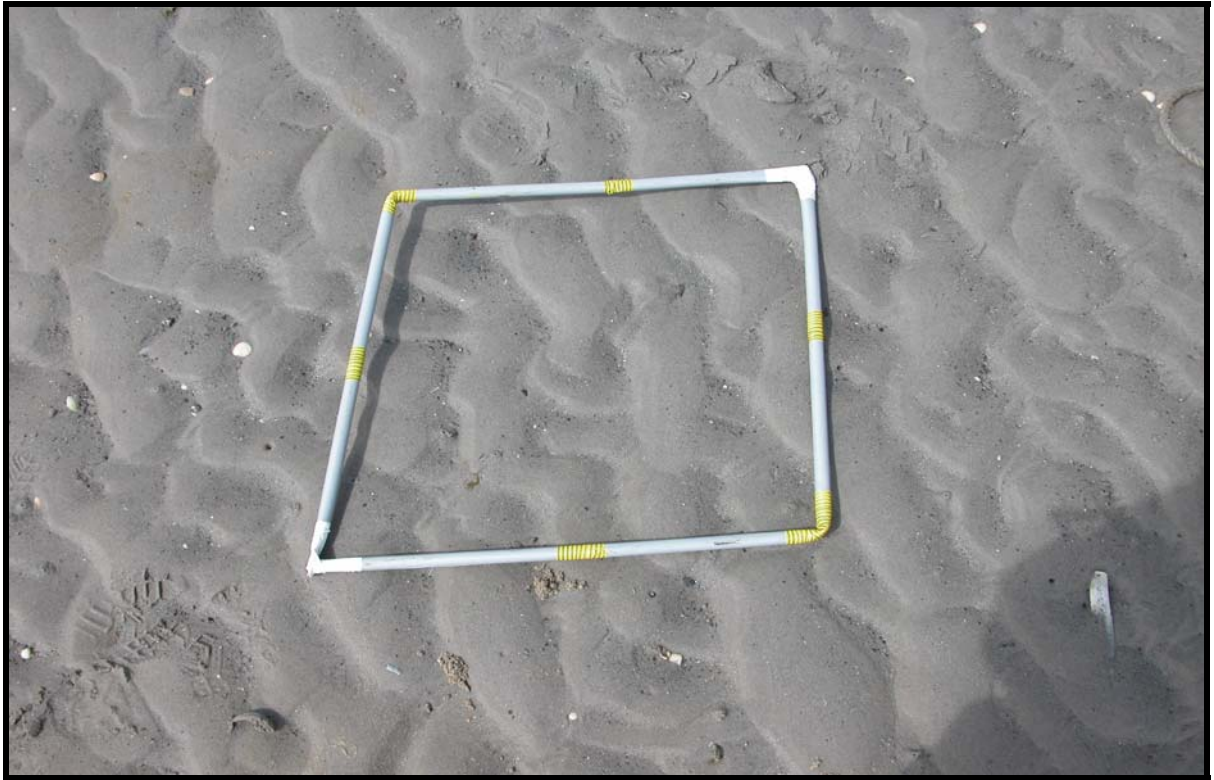
Number of taxa: 8

Station description

Fine rippled compact sand with a thin layer of broken shell on the surface. The sediment sample consisted of 56.96% fine sand and 28.57% medium sand. The remaining fraction being a mixture of small percentages of very coarse to coarse sand and very fine sand. The faunal assemblage consisted of polychaetes (*Nephtys hombergii*, *Orbinia latreillii* and maldanids) and the bivalve *Angulus tenuis*.

Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.6.6.** Site 1a. Station 5. Compact fine sand with rippled surface and deep redox characterised this station.

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## Site No. 6 Clew Bay Complex, Co. Mayo

### Intertidal sampling area 1b

Location: sandflats between the islands of Inishtubrid and Inishquirk southeast of the small peninsula near Roskee, in the north side of Clew Bay.

Date: 09.08.06

Exposure: very sheltered

Sediment grain size and organic carbon content:

Clew Bay Transect 1b	Station 1	Station 2	Station 3	Station 4	Station 5
Sediment Type	(%)	(%)	(%)	(%)	(%)
Gravel	0	0	0	0	0
Very coarse sand	1.3	4.23	1.32	1.39	0.21
Coarse sand	1.12	2.78	1.87	1.44	1.17
Medium sand	25.35	29.36	12.75	11.86	4.8
Fine sand	57.66	59.92	75.76	76.12	73.93
Very fine sand	12.35	3.21	7.2	7.7	17.78
Silt	2.22	0.5	1.1	1.49	2.11
Total Organic Carbon (C%)	0.15	0.12	0.12	0.1	0.11

### Site description

Located in a very sheltered inlet on the north side of Inner Clew Bay, the area surveyed was characterised by intertidal sandflats extending south of the north shore of Clew Bay and protected from the prevailing winds by several small islands. The upper shore was a narrow band with rocks and some cobble with several algal species present, the zonation being that typical of sheltered shores. The *Pelvetia canaliculata* belt was recorded in the upper eulittoral, followed by *Fucus spiralis* and *Ascophyllum nodosum*. Beyond the hard substrate the sandflat extended towards the waterline, with compact rippled sands with some occasional stones with *Fucus vesiculosus* and *Chorda filum* attached. *Arenicola marina* casts were common along with *Cerastoderma edule* burrows and *Ensis ensis* siphon holes. Some filamentous green algae and *Ulva lactuca* were recorded along the strand. Littorinids and anemones were also recorded in the eulittoral fringe, near the rocky shore where *Fucus vesiculosus* covered 60% of the area. Talitrid amphipods were not recorded.



**Figure 3.6.4** View of sampling area 1b near Inishtubrid, Site No. 6 Clew Bay, Co. Mayo.



**Photo 3.6.7.** The upper shore near Inishtubrid consisted of a narrow rocky belt with the usual zonation pattern of a sheltered rocky shore. Sandflats dominated the littoral area below this.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Intertidal sampling area 1b**

Station 1

Location: 53° 53.567' N, 09° 40.42' W

Main sediment type: fine sand

Fauna recorded:

<b>Number of taxa</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Arenicola marina</i>	-	-	C
<i>Tubificoides</i> sp	2	-	-
<i>Ensis ensis</i>	-	-	O
<i>Cerastoderma edule</i>	-	-	C

Number of taxa: 4

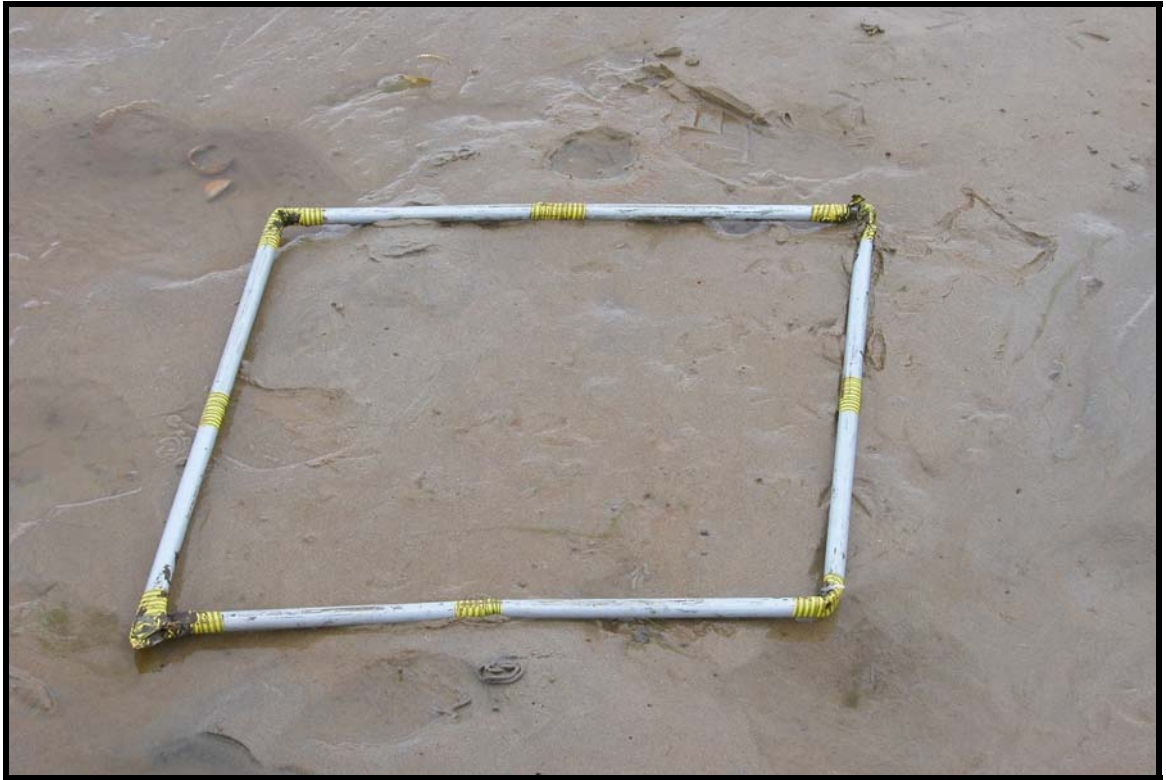
Station description

The area was characterised by fine compact sands with a shallow redox layer of less than 1cm. The station was very species poor as regards to fauna recorded. Signs of faunal activity observed included casts of lugworm *Arenicola marina* and syphon burrows of *Ensis ensis* and *Cerastoderma edule*. The only fauna recorded from the cores consisted of 2 oligochaetes. Faunal species diversity and abundances were strangely very low.

Biotope

Similar to 'LS.Lsa.MoSa.Ol.FS Oligochaetes in full salinity littoral mobile sand' as listed in the JNCC Marine Classification system (Connor *et al.*, 2004).





**Photo 3.6.8.** Site 1b. Station 1. Site No.6 Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Intertidal sampling area 1b**

Station 2

Location: 53° 53.492' N, 09° 40.774' W

Main sediment type: fine sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Nephtys</i> sp.	-	C	-
<i>Nephtys cirrosa</i>	3	-	-
<i>Orbinia latreillii</i>	4	-	-
<i>Scoloplos armiger</i>	2	-	-
<i>Notomastus latericeus</i>	11	-	-
<i>Arenicola marina</i>	-	-	C
<i>Crangon crangon</i>	12	A	A
<i>Liocarcinus arcuatus</i>	1	-	-
<i>Angulus tenuis</i>	14	A	-

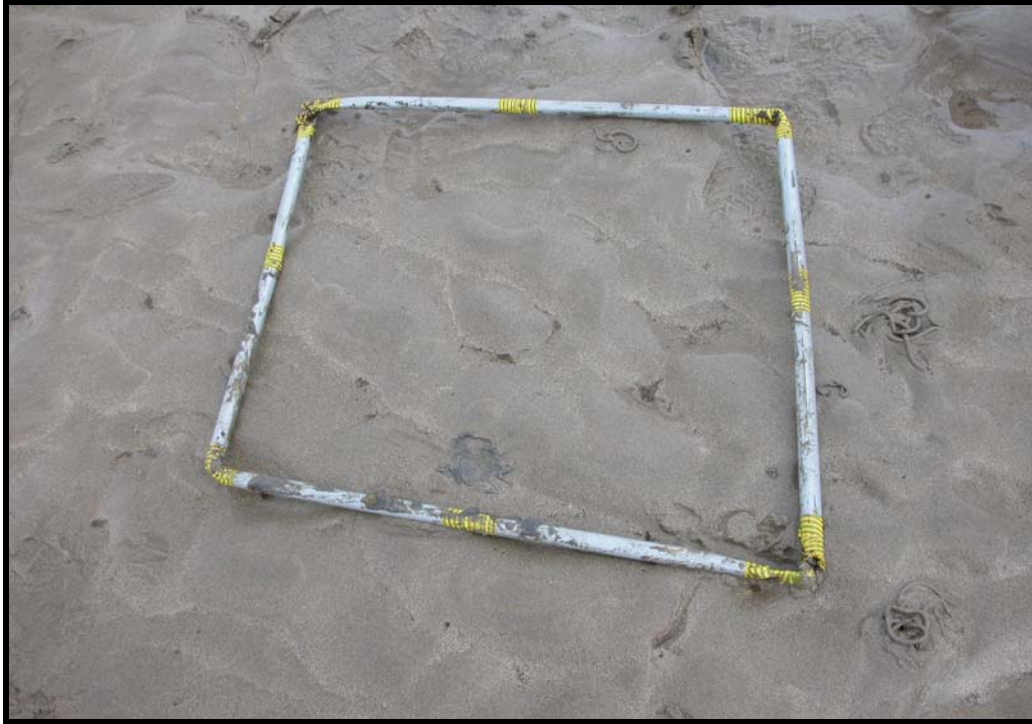
Number of taxa: 8

Station description

Compact rippled fine sand characterised this station. Fine sand was the dominant fraction in the sediment sample (59.92%) followed by medium sand (29.36%). Some casts of *Arenicola marina* were observed on the sediment surface. A total of 8 taxa were recorded from the area. Common shrimp *Crangon crangon*, the capitellid *Notomastus latericeus* and the bivalve *Angulus tenuis* were the most abundant species.

Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.6.9.** Sampling area 1b. Station 2. Site No. 6 Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Intertidal sampling area 1b**

Station 3

Location: 53° 53.662' N, 09° 40.563' W

Main sediment type: fine sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Arenicola marina</i>	-	-	C
<i>Gammarus duebeni</i>	66	A	-
<i>Liocarcinus arcuatus</i>	2	-	-
<i>Angulus tenuis</i>	2	C	-

Number of taxa: 5

Station description

Compacted rippled sand dominated by fine sand (76.12%) with a smaller fraction of medium sand (11.86%). Redox layer was shallow (<1cm). The sediment surface was also characterised by the presence of *Arenicola marina* feeding casts. Results from the core samples returned 3 taxa. The amphipod *Gammarus duebeni* was recorded in particularly high numbers in both the cores and the dig. Also recorded in the cores were 2 specimens of *Liocarcinus arcuatus* and 2 individuals of the bivalve *Angulus tenuis*.

Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.6.10.** Survey area 1b. Station 3. Site 1b Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Intertidal sampling area 1b**

Station 4

Location: 53° 53.63' N, 09° 40.358' W

Main sediment type: fine sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
Chironomida	22	-	-
<i>Golfingia vulgaris</i>	3	-	-
<i>Eteone longa</i>	1	-	-
<i>Anaitides mucosa</i>	3	-	-
<i>Glycera</i> sp.	-	C	-
<i>Glycera tridactyla</i>	3	-	-
<i>Hediste diversicolor</i>	5	A	-
<i>Nephtys</i> sp.	-	A	-
<i>Nephtys hombergii</i>	6	-	-
<i>Scoloplos armiger</i>	3	-	-
<i>Aricidea minuta</i>	1	-	-
Spionidae sp.	-	A	-
<i>Pygospio elegans</i>	86	-	-
<i>Spio decorata</i>	7	-	-
<i>Magelona mirabilis</i>	1	-	-
<i>Capitella capitata</i>	5	-	-
<i>Arenicola marina</i>	-	-	C
<i>Travisia forbesii</i>	1	-	-
<i>Bathyporeia guilliamsoniana</i>	5	-	-
<i>Corophium arenarium</i>	2	-	-
<i>Crangon crangon</i>	5	-	-
<i>Hydrobia neglecta</i>	33	A	A
<i>Modiolula phaseolina</i>	1	-	-
<i>Parvicardium ovale</i>	30	-	-
<i>Cerastoderma edule</i>	-	-	C
<i>Ensis ensis</i>	-	-	F
<i>Angulus tenuis</i>	1	F	-



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Number of taxa: 27

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	0

Number of taxa: 1

#### Station description

The area consisted of fine compacted sand covered sparsely by green filamentous algae *Enteromorpha* spp. The main fraction of the sediment was fine sands (76.12%). The redox layer was deeper than 5cm in some patches of the sediment. *Arenicola marina* casts, and siphon burrows of *Cerastoderma edule* and *Ensis ensis* were scattered through the area. The results of the faunal analysis and the direct observations returned a total number of 27 different taxa. Faunal diversity was high if we compare the results from this station from previous stations sampled in the area. The most diverse phylla were polychaeta (17 taxa) followed by mollusca (5 taxa) and crustacea (3).

#### Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and Angulus tenuis in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.6.11.** Survey Site 1b. Station 4. Inishtubrid, Site No.6 Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Intertidal sampling area 1b**

Station 5

Location: 53° 53.708' N, 09° 40.207' W

Main sediment type: fine sand

Fauna recorded:

<b>Number of taxa</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Actinia equina</i>	-	-	P
<i>Sigalion mathildae</i>	1	-	-
<i>Hediste diversicolor</i>	1	C	-
<i>Nephtys</i> sp.	-	C	-
<i>Nephtys hombergii</i>	2	-	-
<i>Orbinia latreillii</i>	3	C	-
<i>Arenicola marina</i>	-	-	C
<i>Notomastus latericeus</i>	1	-	-
Maldanidae sp.	-	C	-
<i>Praxillura longissima</i>	10	-	-
<i>Euclymene oerstedii</i>	1	-	-
Spirorbidae sp.	-	-	P
Amphipoda sp.	-	C	-
<i>Ampelisca brevicornis</i>	2	-	-
<i>Bathyporeia guilliamsoniana</i>	2	-	-
<i>Gammarus</i> sp.	2	-	-
<i>Crangon crangon</i>	9	-	A
<i>Liocarcinus arcuatus</i>	2	-	P
<i>Littorina</i> sp.	-	-	P
<i>Littorina littorea</i>	-	-	P
<i>Parvicardium ovale</i>	1	-	-
<i>Cerastoderma edule</i>	5	A	A
<i>Angulus tenuis</i>	7	A	-
<i>Macoma balthica</i>	1	C	-

Number of taxa: 24

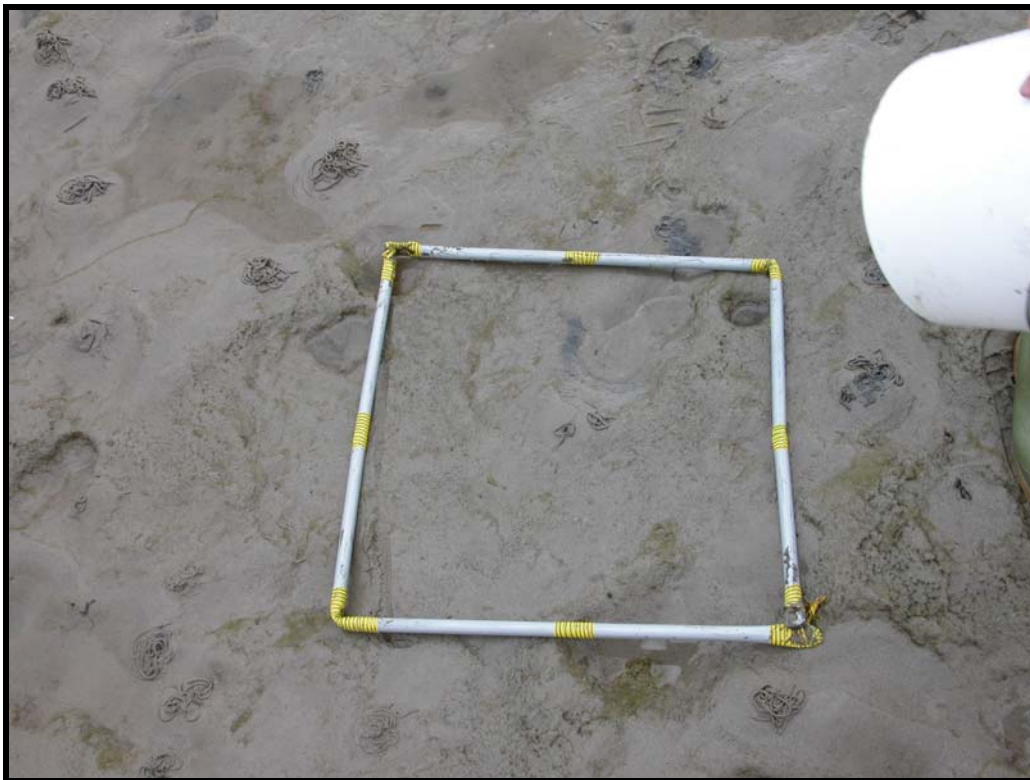
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### Station description

The sandy fraction found in the sediment from this station consisted of fine sand (73.93%) and very fine sand (17.78%). The silt component was higher than in previous stations (2.11%). This station was located directly opposite to the rocky shore, which was dominated by *Fucus vesiculosus* (60%). Spirorbis attached to the furoid fronds, gastropods such as *Littorina littorea* and the anemone *Actinia equina* were the charactersing fauna. The lugworm *Arenicola marina* and the common cockle *Cerastoderma edule* dominated the sandy area from the upper shore. After analysis of the core samples a total of 16 taxa were recorded. After adding the taxa observed from the dug up area and the general observations made before sampling, a final total number of 24 faunal taxa was obtained from this area.

### Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.6.12.** Survey site 1b. Station 5. Inishtubrid, Site No. 6 Clew Bay Complex, Co. Mayo.

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## Site No. 6 Clew Bay Complex, Co. Mayo

### Transect 2

Location: Lisduff, 1km north-east of Newport, Inner Clew Bay.

Date: 09.08.06

Transect starting point: 53° 53.279' N, 09° 33.661' W

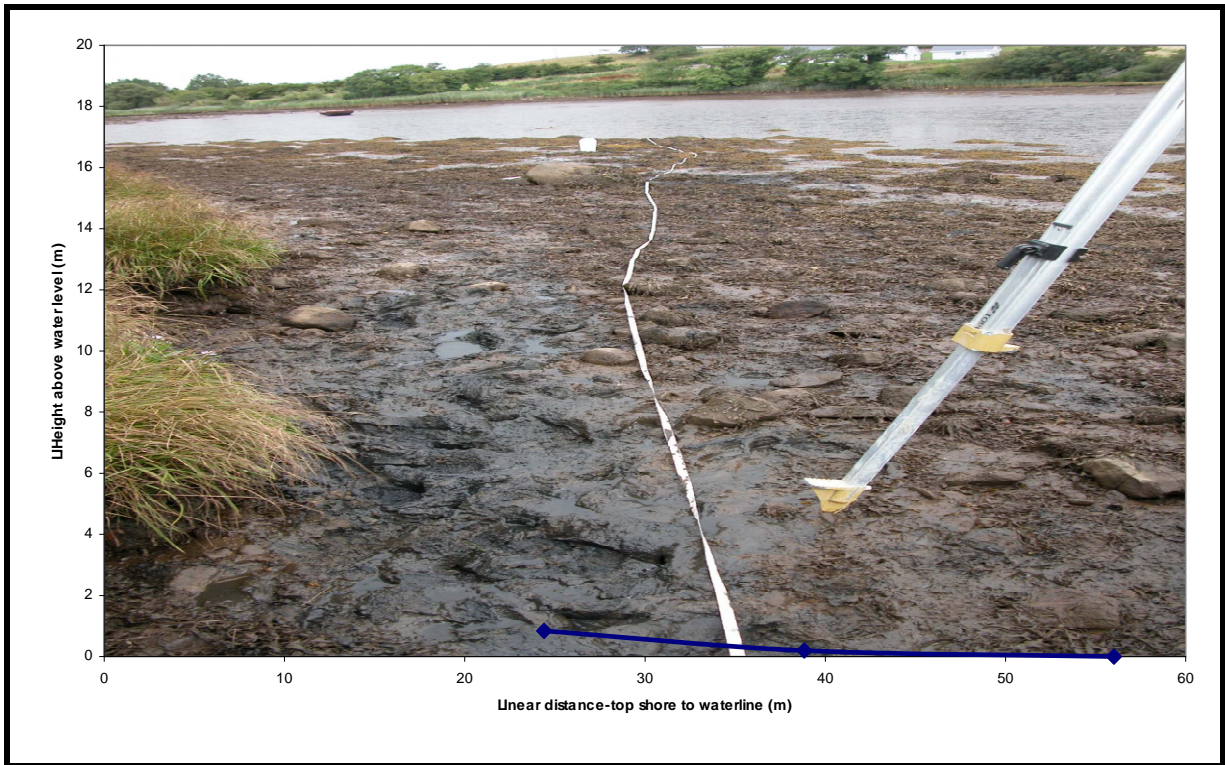
Exposure: ultra sheltered

Sediment grain size and organic carbon content

<b>Clew Bay Transect 2</b>	<b>Station 1</b>	<b>Station 2</b>	<b>Station 3</b>
	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	0.13	0.43	0.08
Coarse sand	17.91	12.09	1.64
Medium sand	38.35	32.56	6.16
Fine sand	22.43	22.37	22.25
Very fine sand	5.92	7.65	21.07
Silt	15.26	24.9	48.8
Total Organic Carbon (C%)	2.69	2.9	2.68

### Site description

The area surveyed was located in a small very sheltered tidal inlet to the north of Newport Channel, Inner Clew Bay. The transect ran from the upper shore to the channel across an intertidal mudflat. The upper shore was backed by a grassy clay bank and was dominated by mud, stones and some boulders. The aerated layer was 2cm deep with black anoxic sediments below it. The algal zonation pattern consisted of an initial *Fucus spiralis* belt covering 30% of the substrate followed by an *Ascophyllum nodosum* belt (30% cover) 5-6 metres wide. Fauna recorded in the upper shore included green crab *Carcinus maenas*, amphipods and the ragworm *Hediste diversicolor*. Talitrid amphipods were not recorded from the upper shore. The mid and lower sections of the intertidal zone consisted of muddy sands with a redox layer less than 1cm deep and no apparent flora or fauna recorded from the direct observations.



**Figure 3.6.5.** Transect 2.Profile and view from upper shore station.Site No.6 Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Transect 2.**

Station 1. Upper shore

Location: 53° 53.279' N, 09° 33.661' W

Distance from High Water: 24.4m

Height above Low Water: 0.84m

Main sediment type: medium sand and mud

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Hediste diversicolor</i>	29	A	P
<i>Aphelochaeta marioni</i>	1	-	-
Oligochaeta sp.	4	-	-
Enchytraeidae sp.	1	-	-
Amphipoda sp.	-	A	-
<i>Chaetogammarus marinus</i>	3	-	-
<i>Corophium arenarium</i>	6	-	-
<i>Carcinus maenas</i>	-	-	P

Number of taxa: 8

Flora recorded:

<b>Taxon name</b>	<b>Observed</b>
<i>Fucus spiralis</i>	C
<i>Ascophyllum nodosum</i>	C

Number of taxa: 2

Station description

Soft substrate with mud covering stones and small boulders. Results from the granulometric analysis returned 38.35% medium sand, 22.43% fine sand and some silt (15.26%). The boulders with attached fucoids were located in a narrow band extending from the clay bank in the top shore to ca. 5m down towards the channel. The brown algae *Fucus spiralis* and *Ascophyllum nodosum* covered 30% and 20% of the substrate in that order. Sparse fauna included *Carcinus maenas* and *Hediste diversicolor*. The faunal analysis of the sediment samples returned 6 different taxa with *Hediste diversicolor* dominant followed by brackish-water amphipods and oligochaetes.



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## Biotope

Similar to 'LS.LMx.GvMu.HedMx.Cir *Hediste diversicolor*, cirratulids and *Tubificoides* spp. in littoral gravelly mud' as listed in the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.6.13.** Transect 2. Station 1. Upper shore. Site No. 6 Clew Bay Complex, Co. Mayo.

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## Site No. 6 Clew Bay Complex, Co. Mayo

### Transect 2

#### Station 2. Mid shore

Location: 53° 53.285'N, 09° 36.959'W

Distance from High Water: 38.83

Height above Lower Water: 0.2m

Main sediment type: muddy sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Hediste diversicolor</i>	49	A	-
<i>Tubificoides</i> sp	25	-	-
<i>Tubificoides benedii</i>	7	-	-
Enchytraeidae sp.	2	-	-
<i>Corophium</i> sp.	-	A	-
<i>Corophium arenarium</i>	27	-	-
<i>Macoma balthica</i>	1	F	-
<i>Scrobicularia plana</i>	1	F	-
<i>Amphipholis squamata</i>	1	-	-

Number of taxa: 9

#### Station description

Soft anoxic muddy sand (32.56% medium sand, 24.9% silt) dominated the mid shore station. No fauna was recorded from direct observations. Fauna recorded from the dig and the sediment samples contained high numbers of *Hediste diversicolor*, oligochaetes and the estuarine amphipod *Corophium arenarium*. Bivalves were also represented by *Macoma balthica* and *Scrobicularia plana*.

#### Biotope

Similar to 'LS.LMu.UEst.Hed.Cvol *Hediste diversicolor* and *Corophium volutator* in littoral mud' as listed in the JNCC Marine Classification system.



**Photo 3.6.14.** Transect 2. Station 2. Mid shore. Site No. 6 Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Transect 2**

Station 3. Lower shore

Location: 53° 53.290'N, 09° 33.683'W

Main sediment type: Muddy sand

Distance from High Water: 56.01m

Height above Low Water: 0m

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Glycera tridactyla</i>	1	-	-
<i>Hediste diversicolor</i>	10	C	-
<i>Tubificoides sp</i>	29	-	-
<i>Tubificoides benedii</i>	4	-	-
<i>Corophium sp.</i>	-	A	-
<i>Corophium arenarium</i>	34	-	-
<i>Angulus tenuis</i>	1	F	-

Number of taxa: 9

Station description:

Soft muddy sands (48.8% silt, 43.42% fine sands) were also the dominant sediment type in the lower shore, near the central channel. No fauna was observed from the surface or the dug over areas. The results of the faunal analysis indicated that a typical brackish water faunal community was present in the area, dominated by *Hediste diversicolor*, oligochaetes and *Corophium arenarium*. The only bivalve species recorded in the samples was *Angulus tenuis*.

Biotope

Similar to 'LS.LMu.UEst.Hed.Cvol *Hediste diversicolor* and *Corophium volutator* in littorl mud' as listed in the JNCC Marine Classification system



**Photo 3.6.15.** Transect 2. Station 3. Lower shore. Site No. 6 Clew Bay Complex, Co. Mayo.

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## Site No. 6 Clew Bay Complex, Co. Mayo

### Transect 3

Location: Claggan Strand, between Inishnakillew and Claggan Quay, Inner Clew Bay.

Date: 14.08.06

Transect starting point: 53° 50.914'N, 09° 36.97' W.

Exposure: extremely sheltered

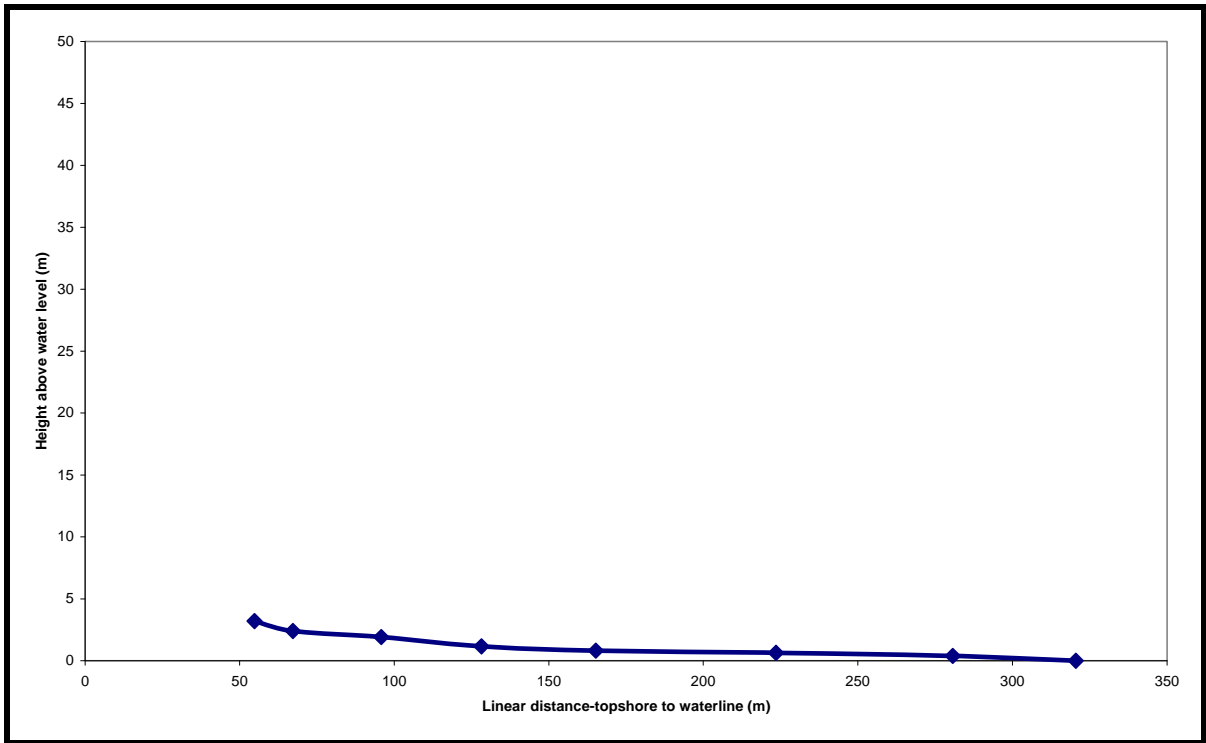
Sediment grain size and organic carbon content

<b>Clew Bay Transect 3</b>	<b>Station 1</b>	<b>Station 2</b>	<b>Station 3</b>
	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	7.97	0.3	0.03
Coarse sand	8.46	3.41	2.08
Medium sand	6.8	15.31	10.2
Fine sand	18.65	42.13	36.82
Very fine sand	14.61	16.24	15.28
Silt	43.51	22.61	35.59
Total Organic Carbon (C%)	3.09	1.6	1.33

### Site description

The site consists of sheltered mudflats backed by a rocky upper shore with fucoids and rockpools. Redox layer was very shallow, with anoxic sediments at the surface in some patches. *Arenicola marina* casts were numerous in the soft muddy sand. Talitrid amphipods were recorded and sampled in the upper shore. The lower station was carpeted by red filamentous algae.





**Figure 3.6.6.** Transect 3 profile. Site No. 6 Clew Bay Complex, Co. Mayo.

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## Site No. 6 Clew Bay Complex, Co. Mayo

### Transect 3

#### Strand line

Location: 53 50.914'N, 09 36.970'W

Distance from High Water: 0m

Height above Low Water: 1.37m

Main sediment type: muddy sand

Fauna recorded:

Taxon name	Dig	Observed
Talitrus saltator	A	A

Number of taxa: 1

#### Station description

The strand line was located above the belt of *Fucus spiralis*. The sediment was muddy gravel with stones and scattered boulders. Talitrid amphipods were recorded under the mats of dead algae. Specimens were collected.

#### Biotope

Similar to 'LR.LLR.F.Fspi.X *Fucus spiralis* on full salinity upper eulittoral mixed substrata' by the JNCC Marine Habitat Classification system (Connor *et al.*, 2004).



**Photo 3.6.16.** View of Transect 3 from the strand line. Clew Bay, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Transect 3**

Station 1. Upper shore

Location: 53° 50.915' N, 09° 36.959' W

Distance from High Water: 67.2m

Height above Low Water: 2.17m

Main Sediment type: muddy sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
Tipula sp.	1	-	-
Tipulidae Sp.	1	-	-
Nemertea sp.	1	-	-
<i>Cerebratulus fuscus</i>	2	-	-
<i>Hediste diversicolor</i>	1	-	-
<i>Arenicola marina</i>	-	-	C
<i>Tubificoides sp</i>	41	-	-
<i>Tubificoides benedii</i>	67	-	-
<i>Enchytraeidae sp.</i>	6	-	-
<i>Chaetogammarus marinus</i>	2	-	-
<i>Eulimnogammarus obtusatus</i>	1	-	-
<i>Corophium sp.</i>	-	S	-
<i>Corophium arenarium</i>	151	-	-

Number of taxa: 13

Flora recorded:

<b>Taxon name</b>	<b>Observed</b>
<i>Fucus spiralis</i>	C
<i>Ascophyllum nodosum</i>	O

Number of taxa: 2

Station description:

The upper shore consisted of soft muddy sand (43.51% mud, 18.65% fine sand, 14.61% very fine sand) with a very shallow redox layer. The algal zonation consisted of sparse cover of brown algae *Fucus spiralis* (20%) and *Ascophyllum nodosum* (5%).

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*Arenicola marina* burrows were abundant on the sediment surface. The fauna recorded was dominated by *Corophium arenarium* amphipods, typical of estuarine areas, and oligochaetes among other soft bottom species tolerant to brackish water conditions.

#### Biotope

Similar to 'LS.Lmu.Uest.Hed.Cvol *Hediste diversicolor* and *Corophium volutator* in littoral mud' as listed in the JNCC Marine Classification system.



**Photo 3.6.17.** Transect 3. Station 1. Upper shore. Site No.6 Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Transect 3**

Station 2. Mid shore

Location: 53° 50.925' N, 09° 36.906' W

Distance from High Water: 128.2

Height above Low Water: 3.41m

Main sediment type: fine sand with a layer of mud

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Halichondria panicea</i>	-	-	P
Chironomidae	1	-	-
<i>Tipula</i> sp.	1	-	-
<i>Glycera</i> sp.	1	-	-
<i>Nephtys</i> sp.	-	C	-
<i>Nephtys cirrosa</i>	6	-	-
<i>Nephtys hombergii</i>	4	-	-
<i>Arenicola marina</i>	-	-	F
<i>Ampharete lindstroemi</i>	1	-	-
<i>Tubificoides</i> sp	37	-	-
<i>Tubificoides benedii</i>	53	-	-
<i>Microdeutopus anomalus</i>	1	-	-
<i>Corophium</i> sp.	-	C	-
<i>Corophium arenarium</i>	8	-	-
<i>Liocarcinus arcuatus</i>	1	-	-
<i>Cylichna cylindracea</i>	1	-	-
<i>Patella</i> sp.	-	-	P
<i>Mytilus edulis</i>	-	-	P
<i>Mysella bidentata</i>	1	-	-
<i>Macoma balthica</i>	1	-	-
<i>Ascidella aspersa</i>	-	-	P
<i>Corbula gibba</i>	2	-	-

Number of taxa: 21



Flora recorded:

Taxon name	Observed
<i>Fucus vesiculosus</i>	C
<i>Ascophyllum nodosum</i>	F

Number of taxa: 2

#### Station description

The mid shore consisted of soft muddy sands (42.13% fine sand, 22.61% silt). The shore was dominated by *Ascophyllum nodosum* (25%) and *Fucus vesiculosus* (10%). Casts of the lugworm *Arenicola marina* (5 casts/m<sup>2</sup>) were recorded on the area. Other species observed included sponges (*Halichondria panicea*), clumps of mussels *Mytilus edulis*, limpet *Patella* sp. and the tunicate *Asciidiella aspersa*. Species diversity was relatively high compared to the upper shore, with 15 different taxa found in the sediment samples, the majority of which were annelids. In terms of abundances, oligochaetes were the most numerous with a total of 90 specimens recorded.

#### Biotope

Not listed in the JNCC Marine Classification system.



**Photo 3.6.18.** Transect 3.Station 2. Mid shore . Site No. 6 Clew Bay Complex, Co. Mayo.



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**Site No.6 Clew Bay Complex, Co., Mayo**

**Transect 3**

Station 3. Lower shore

Location 53 50.950'N, 09 36.736'W

Distance from High Water: 320m

Height above Low Water: 0m

Main Sediment type: muddy sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
Chironomida	22	-	-
<i>Mysta picta</i>	1	-	-
<i>Anaitides mucosa</i>	1	-	-
<i>Hediste diversicolor</i>	1	C	-
<i>Nephtys sp.</i>	-	A	-
<i>Nephtys hombergii</i>	10	-	-
<i>Scoloplos armiger</i>	1	-	-
<i>Praxillela praetermissa</i>	1	-	-
<i>Polyophtahmus pictus</i>	27	-	-
Oligochaeta sp.	80	-	-
Tubificoides sp	17	-	-
<i>Tubificoides benedii</i>	12	-	-
Amphipoda sp.	-	A	-
<i>Metaphoxus pectinatus</i>	1	-	-
<i>Microdeutopus anomalus</i>	57	-	-
<i>Corophium arenarium</i>	1	-	-
<i>Rissoa parva</i>	2	-	-
<i>Hydrobia neglecta</i>	72	-	S
<i>Parvicardium minimum</i>	1	-	-

<i>Corbula gibba</i>	1	-	-
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Number of taxa: 20

Flora recorded:

Taxon name	Observed
Rhodophycota sp.	S

Number of taxa: 1

#### Station description

The lower shore consisted of soft mud (35.59%) and fine sand (36.82%) covered by red filamentous algae. *Nephtys* sp., *Hediste diveriscolor*, unidentified amphipods and *Hydrobia neglecta* represented the fauna recorded from the sediment surface and the dug up area. The faunal community was diverse and it was represented by 7 different taxa of polychaete, 1 oligochaete, 3 amphipod species and 3 species of molluscs. Highest abundances were recorded for oligochaetes, the amphipod *Microdeutopus anomalus*, the gastropod *Hydrobia neglecta*, the polychaete *Polyophthalmus pictus* and larval stages of Chironomidae (Diptera).

#### Biotope

Not in the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.6.19.** Transect 3. Station 3. A dense mat of filamentous red algae characterised the lower shore area. Site No. 6 Clew Bay Complex, Co. Mayo.

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## Site No. 6 Clew Bay Complex, Co. Mayo

### Transect 4

Location: Bawn Strand, Carrawholly, North Westport Bay, Inner Clew Bay

Date: 10.08.06

Transect starting point: 53° 48.654' N, 09° 35.526' W

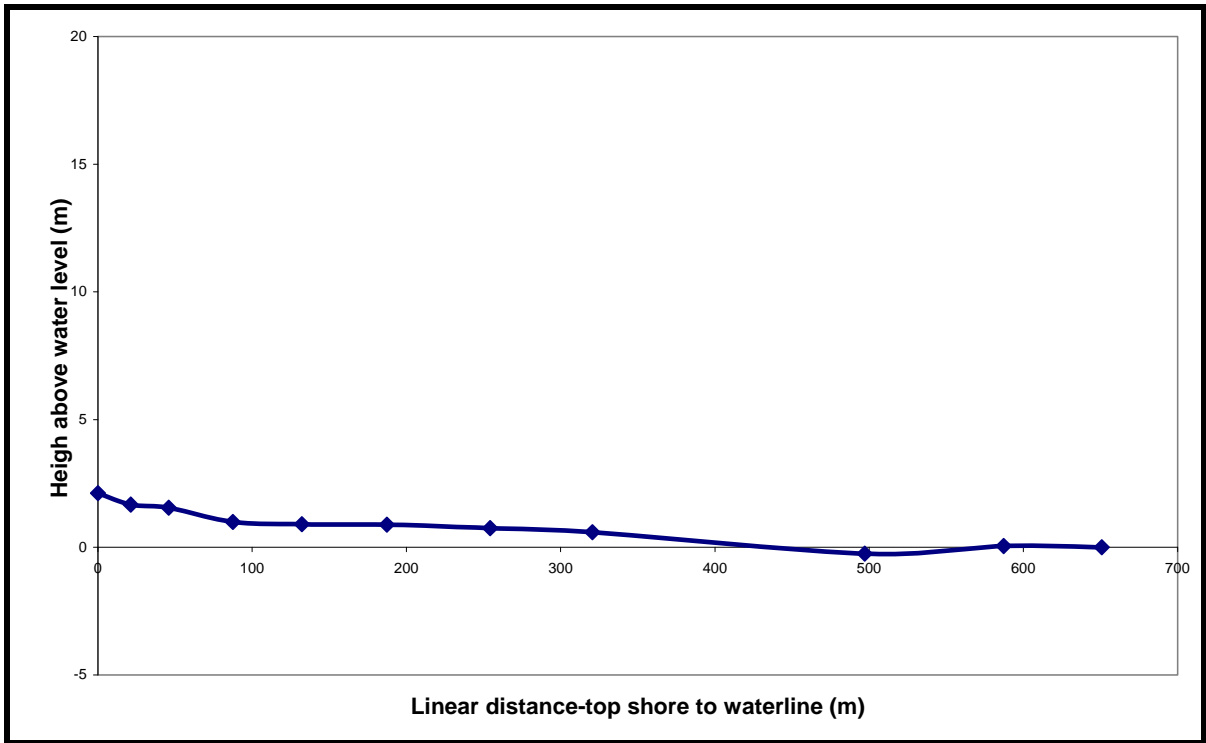
Exposure: very sheltered

Sediment grain size and organic carbon content

Clew Bay Transect 4	T4ST1 Upper shore	T4ST2 Mid shore	T4ST3 Lower shore
Sediment Type	(%)	(%)	(%)
Gravel	32.99	0	23.91
Very coarse sand	9.53	1.2	6.87
Coarse sand	6.54	7.36	3.04
Medium sand	10.80	24.53	5.79
Fine sand	35.65	36.27	44.15
Very fine sand	4.43	11.91	15.06
Silt	0.05	18.73	1.18
Total Organic Carbon (C%)	0.51	0.4	5.28

### Site description

Moderately to very sheltered site dominated by cobble and pebble in the upper shore with *Pelvetia canaliculata* and *Fucus spiralis*. Talitrid amphipod burrows were observed in the strand line. The sediment was dug up and specimens were collected. The mid shore consisted of fine sands with a shallow redox layer (<1cm) covered by green filamentous algae, *Fucus vesiculosus* (10%) and *Ascophyllum nodosum* (2%). A raised rocky section was located between the mid and lower shores, carpeted with furoids and with numerous fauna in the rockpools including *Halichondria* spp., *Crangon crangon*, *Carcinus maenas*, littorinids, *Patella vulgaris*, *Ostrea edulis*, *Monodonta lineanata* and *Pagurus bernhardus*. The lower shore shore was gravelly on the surface with medium sand and a shallow redox layer. Some *Enteromorpha* and a sparse furoid cover (10%) were recorded.



**Figure 3.6.7.** Transect 4 view from the upper shore. Site No.6 Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Transect 4**

Strand line

Location: 53° 48.654' N, 09° 35.526' W

Distance from High Water: 0m

Height above Low Water: 2.12

Main sediment type: cobble and pebble

Fauna recorded:

Taxon name	Dig	Observed
Talitrus saltator	A	A

Number of taxa: 1

Station description:

The strand line was located very close to the grass banks on the supralittoral area and it was characterised by abundant dead fucooids and red algae on cobbles and pebbles. Abundant talitrids were recorded when lifting the dead algae. Specimens were collected.



**Photo 3.6.20.** View of the upper littoral zone in Transect 4. Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Transect 4**

Station 1.Upper shore

Location: 53° 48.653' N, 09° 35.530' W

Distance from High Water: 21.2m

Height above Low Water: 1.88m

Main sediment type: gravel and medium sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Hediste diversicolor</i>	6	A	-
<i>Pygospio elegans</i>	1	-	-
<i>Notomastus latericeus</i>	1	-	-
<i>Travisia forbesii</i>	1	-	-
<i>Tubificoides</i> sp	3	-	-
<i>Tubificoides benedii</i>	1	-	-
Enchytraeidae sp.	1	-	-
<i>Carcinus maenas</i>	1	-	P

Number of taxa: 8

Flora recorded:

<b>Taxon name</b>	<b>Observed</b>
<i>Pelvetia canaliculata.</i>	F

Number of taxa: 1

Station description

The station was located in the upper eulittoral band. The sediment consisted of gravel and fine sand. It was dominated by the brown algae *Pelvetia canaliculata* covering ca.2m of the upper eulittoral band followed by *Fucus vesiculosus* near the mid eulittoral. Few macroinvertebrate species were present in the sediment samples and their abundances were also low. These included *Hediste diversicolor* and tubificid oligochaetes among other taxa.

Biotope

Similar to 'LS.Lmu.Uest.Hed.Ol *Hediste diversicolor* and oligochaetes in littoral mud' as listed in the JNCC Marine Classification system.





**Photo 3.6.21.** Transect 4. Station 1. Upper shore. Site No.6 Clew Bay Complex, Co. Mayo

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Transect 4**

Station 2.Mid shore

Location: 53° 48.63' N, 09° 35.59' W

Distance from High Water: 87.5m

Height above Low Water: 0.99m

Main sediment type: muddy sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
Chilopoda	1	-	-
<i>Tipula</i> sp.	1	-	-
<i>Anemonia</i> sp.	5	-	P
<i>Pygospio elegans</i>	1	-	-
<i>Arenicola marina</i>	5	-	A
<i>Tubificoides benedii</i>	8	-	-
<i>Crangon crangon</i>	1	-	-
<i>Hydrobia neglecta</i>	1	-	-
<i>Cerastoderma edule</i>	1	C	A

Number of taxa: 9

Flora recorded:

<b>Taxon name</b>	<b>Observed</b>
<i>Enteromorpha</i> sp.	O
<i>Ulva lactuca</i>	O
<i>Fucus vesiculosus</i>	F
<i>Ascophyllum nodosum</i>	O

Number of taxa: 2

**Station description**

The dominant substrate in this station were soft muddy sands (24.53% medium sand, 36.27% fine sand and 18.73% silt). Redox layer was very shallow and peaty soil was found below the first 10cm of the sediment. The sediment surface was sparsely covered by green filamentous algae. Other algal species recorded on the mid shore included *Fucus vesiculosus* (10% cover) and *Ascophyllum nodosum* (2% cover). Abundant *Cerastoderma edule* burrows

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and *Arenicola marina* casts were recorded. Only 9 macroinvertebrate taxa were recorded from the core samples, the most abundant of which were *Arenicola marina* and *Tubificoides benedii*.

#### Biotope

Not listed in the JNCC Marine Classification system.



**Photo 3.6.22.** Transect 4. Station 2. Mid shore. Site No. 6 Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Transect 4**

Station 3.Lower shore

Location: 53° 48.470' N. 09° 36.008' W

Distance from High Water: 650.8m

Height above Low Water: 0m

Main sediment type: gravely sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Anemonia</i> sp.	3	-	-
<i>Harmothoe imbricata</i>	1	-	-
<i>Pholoe synophthalmica</i>	1	-	-
<i>Sigalion mathildae</i>	2	-	-
<i>Glycera tridactyla</i>	1	-	-
<i>Hediste diversicolor</i>	1	C	-
<i>Perinereis cultrifera</i>	2	C	-
<i>Nephtys</i> sp.	1	C	-
<i>Nephtys cirrosa</i>	1	-	-
<i>Scoloplos armiger</i>	2	-	-
<i>Capitella capitata</i>	2	-	-
<i>Mediomastus fragilis</i>	1	-	-
<i>Notomastus latericeus</i>	5	-	-
<i>Chaetogammarus marinus</i>	1	-	-
<i>Corophium arenarium</i>	1	-	-
<i>Pagurus bernhardus</i>	2	-	P
<i>Crangon crangon</i>		-	-
<i>Liocarcinus arcuatus</i>	1	-	P
<i>Patella</i> sp.	1	-	P
<i>Littorina</i> sp.		-	P
<i>Lucinoma borealis</i>	1	-	-
<i>Angulus tenuis</i>	3	C	-
<i>Macoma balthica</i>		C	-
<i>Ascidella aspersa</i>		-	P

Number of taxa: 24

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Flora recorded:

<b>Taxon name</b>	<b>Observed</b>
<i>Enteromorpha</i> sp.	O
<i>Fucus serratus</i>	C
<i>Ascophyllum nodosum</i>	C

Number of taxa: 3

#### Station description

The lower shore consisted of compact gravels with some silt, shell and pebbles on the surface. Some tidal pools were recorded. Redox layer was observed less than 1cm below the surface. Algae recorded included *Enteromorpha* sp., *Fucus serratus* and *Ascophyllum nodosum*, each species covering 10% of the sediment. As regards to the faunal community present the lower shore station was diverse as 24 taxa were recorded in total. Anemones, common shrimp *Crangon crangon*, the molluscs *Macoma balthica* and *Littorina littorea* and the tunicate *Asciidiella aspersa* were recorded from the sediment surface and in the tidal pools. A total 22 taxa were recorded from the dug up area and the core sediment samples. The most diverse group were the polychaetes with 12 different taxa. Abundances were very low for each taxa recorded, the most abundant species being the capitellid polychaete *Notomastus latericeus* and the bivalve *Angulus tenuis*.

#### Biotope

Not listed in the JNCC Marine Classification system.





**Photo 3.6.23.** Transect 4. Station 3. Lower shore. Site No. 6 Clew Bay Complex, Co. Mayo.



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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Transect 5**

Location: Ummeraboy Strand, Carrowkeeren, south side of Inner Clew Bay

Date: 11.08.06

Transect starting point: 53 47.260'N, 09 37.990'W

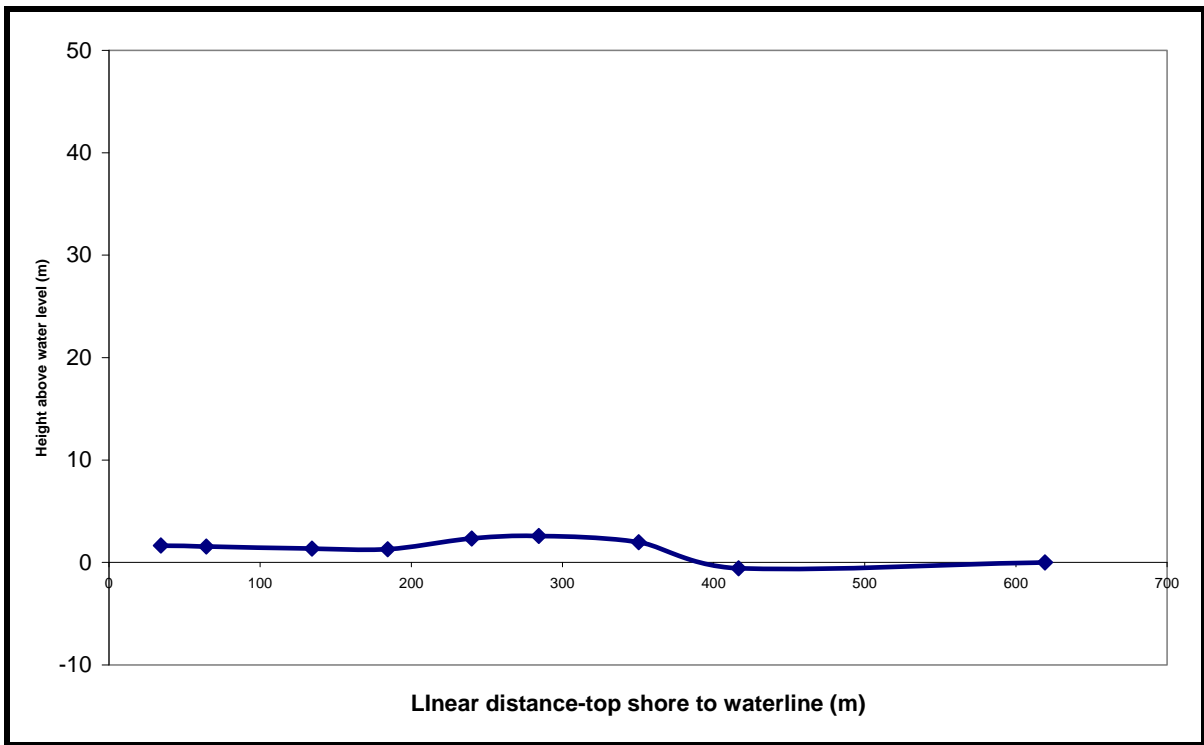
Exposure: Very sheltered

Sediment grain size and organic carbon content:

	<b>T5 ST1</b>	<b>T5 ST2</b>	<b>T5 ST3</b>
<b>Clew Bay Transect 5</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	60.25	28.93	0
Very coarse sand	20.30	14.20	2.63
Coarse sand	13.33	7.79	4.37
Medium sand	1.75	4.97	52.16
Fine sand	2.03	13.64	39.17
Very fine sand	2.18	27.70	1.17
Silt	0.15	2.77	0.5
Total Organic Carbon (C%)	0.87	0.50	0.16

Site description:

This area was located at a large sandy strand and protected to the west by White Strand, a sand dune system in the southern side of Inner Clew Bay. The transect started in a cobblely upper shore with a furoid band of ca.10m dominated by *Fucus spiralis* covering 40% of the surface, followed by *Ascophyllum nodosum* and *Fucus serratus* in the lower part of the brown algae belt. *Enteromorpha intestinalis* with some *Fucus serratus* characterised the mid and lower shore, with abundance of *Lanice conchilega*, *Chaetopterus variopedatus* tubes and live *Ostrea edulis* and *Cerastoderma edule*. Talitrid amphipods were recorded and collected under the debris and dead algae in the strand line.



**Figure 3.6.8.** Transect 5 profile and view from the upper shore. Site No.6 Clew Bay Complex, Co. Mayo.



**Photo 3.6.24.** View of Transect 5 from the lower shore. Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Transect 5**

Strand line

Location: 53 47.260'N, 09 37.990'W

Distance from High Water: 0m

Height above Low Water: 1.65

Main sediment type: cobble and pebble

Fauna recorded:

Taxon name	Dig	Observed
<i>Talitrus saltator</i>	A	A

Number of taxa: 1

Station description

Located at the top end of the littoral fringe near a grass bank, the strand line was marked by the presence of clumps of dead *Fucus spiralis*. Talitrid amphipods were abundant underneath the drift algae. Specimens were collected.



**Photo 3.6.25.** View of the upper shore and strand line of Transect 5. Clew Bay, co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Transect 5**

Station 1. Upper shore

Location: 53° 47.264' N, 09° 37.977' W

Distance from High Water: 34.3m

Height above Low Water: 1.57m

Main sediment type: gravel and coarse sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
Nematoda sp.	70	-	-
Nemertea sp.	2	-	-
Sipunculidae sp.	3	-	-
<i>Glycera tridactyla</i>	1	-	-
<i>Ehlersia cornuta</i>	2	-	-
<i>Hediste diversicolor</i>	1	C	-
<i>Capitella capitata</i>	1	-	-
<i>Ampharete</i> sp.	1	-	-
<i>Enchytraeidae</i> sp.	75	-	-
Gammaridae indet.		A	P
<i>Chaetogammarus marinus</i>	50	-	P
<i>Carcinus maenas</i>	1	-	P
<i>Modiolus modiolus</i>	4	-	-
<i>Parvicardium ovale</i>	1	-	-

Number of taxa: 14

Flora recorded:

<b>Taxon name</b>	<b>Observed</b>
<i>Fucus vesiculosus</i>	C
<i>Ascophyllum nodosum</i>	O

Number of taxa: 2

**Station description**

The station consisted of gravel (60.25%) and coarse sand (20.30%) with pebble and cobble on the surface layer. It was located in the *Fucus vesiculosus/Ascophyllum nodosum*



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belt. Fauna observed consisted only of *Hediste diversicolor*, green crabs *Carcinus maenas* and gammaridean amphipods (later identified in the lab as *Chaetogammarus marinus*). Faunal analysis of the sediment samples revealed a faunal community dominated by encytraeid oligochaetes, nematodes and gammaridean amphipods (*Chaetogammarus marinus*). Other fauna recorded included polychaetes such as *Glycera tridactyla* and *Ehlersia cornuta* and the mussel *Modiolus modiolus*.

#### Biotope

Similarr to 'LR.LLR.F.Asc.X *Ascophyllum nodosum* on full salinity mid eulittoral mixed substrata' of the JNCC Classification system (Connor *et al.*, 2004).



**Photo 3.6.26.** Transect 5. Station 1. Upper shore. Site No.6 Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo**

**Transect 5**

Station 2. Mid shore

Location: 53° 47.274'N, 09° 37.975'W

Distance from High Water: 64.3m

Height above Low Water: 1.36m

Main sediment type: silty gravel

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
Nematoda sp.	1	-	-
Nemertea sp.	3	-	-
<i>Golfingia vulgaris</i>	35	A	-
<i>Harmothoe imbricata</i>	1	-	-
<i>Capitella capitata</i>	6	-	-
<i>Mediomastus fragilis</i>	1	-	-
<i>Notomastus latericeus</i>	6	-	-
<i>Maldanidae</i> sp.	4	C	-
<i>Pomatoceros triqueter</i>	7	-	-
<i>Carcinus maenas</i>	3	-	P
<i>Buccinum undatum</i>	1	-	P
<i>Parvicardium exiguum</i>	1	-	-
<i>Tapes</i> sp.	-	C	-
<i>Tapes aureus</i>	1	-	-
<i>Tapes decussatus</i>	1	-	-

Number of taxa: 15

Flora recorded:

<b>Taxon name</b>	<b>Observed</b>
<i>Enteromorpha</i> sp.	S
<i>Fucus vesiculosus</i>	S
<i>Fucus serratus</i>	S

Number of taxa: 3



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### Station description

The station consisted of muddy gravel (28.93% gravel, 30.47% fine sand and silt) dominated by *Enteromorpha* sp., *Fucus serratus* and *Fucus vesiculosus* covering almost 100% of the sediment surface. The core sediment samples contained 15 different taxa and high numbers of the sipunculid *Golfingia vulgaris*, 6 different polychaete species and two species of bivalve belonging to the genus *Tapes*, all in low densities.

### Biotope

Not listed in the JNCC Marine Classification system.



**Photo 3.6.27.** Transect 5. Station 2. Mid shore. Site No.6 Clew Bay Complex, Co. Mayo.

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**Site No. 6 Clew Bay Complex, Co. Mayo****Transect 5**Station 3. Lower shore

Location: 53° 47.55' N, 09° 37.87' W

Distance from High Water: 619.2m

Height above Low Water: 0m

Main sediment type: fine and medium sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
Chironomida	1	-	-
Nematoda sp.	1	-	-
<i>Anaitides mucosa</i>	2	-	-
<i>Eumida bahusiensis</i>	1	-	-
<i>Glycera tridactyla</i>	3	-	-
<i>Sphaerosyllis hystrix</i>	1	-	-
<i>Hediste diversicolor</i>	2	C	-
<i>Nephtys</i> sp.	-	C	-
<i>Nephtys cirrosa</i>	2	-	-
<i>Marphysa bellii</i>	1	-	-
<i>Orbinia latreillii</i>	3	-	-
<i>Scoloplos armiger</i>	1	-	-
Cirratulidae	3	-	-
Chaetopteridae sp.	-	-	P
<i>Notomastus latericeus</i>	2	-	-
<i>Praxillura longissima</i>	1	-	-
<i>Travisia forbesii</i>	1	-	-
<i>Owenia fusiformis</i>	7	-	-
<i>Lanice conchilega</i>	-	-	C
<i>Pomatoceros lamarcki</i>	1	-	P
Enchytraeidae sp.	1	-	-
<i>Lysianassa ceratina</i>	1	-	-
<i>Ampelisca brevicornis</i>	1	-	-
<i>Bathyporeia guilliamsoniana</i>	1	-	-
<i>Bathyporeia nana</i>	2	-	-

<i>Microdeutopus anomalus</i>	1	-	-
<i>Corophium arenarium</i>	2	-	-
<i>Hyas araneus</i>	1	-	-
<i>Thia scutellata</i>	1	-	-
<i>Liocarcinus</i> sp.	1	-	-
<i>Cylichna cylindracea</i>	1	-	-
<i>Mytilus edulis</i>	1	-	F
<i>Ostrea edulis</i>	-	-	O
<i>Cerastoderma edule</i>	-	-	C
<i>Angulus tenuis</i>	17	A	-
<i>Asciidiella scabra</i>	1	-	P

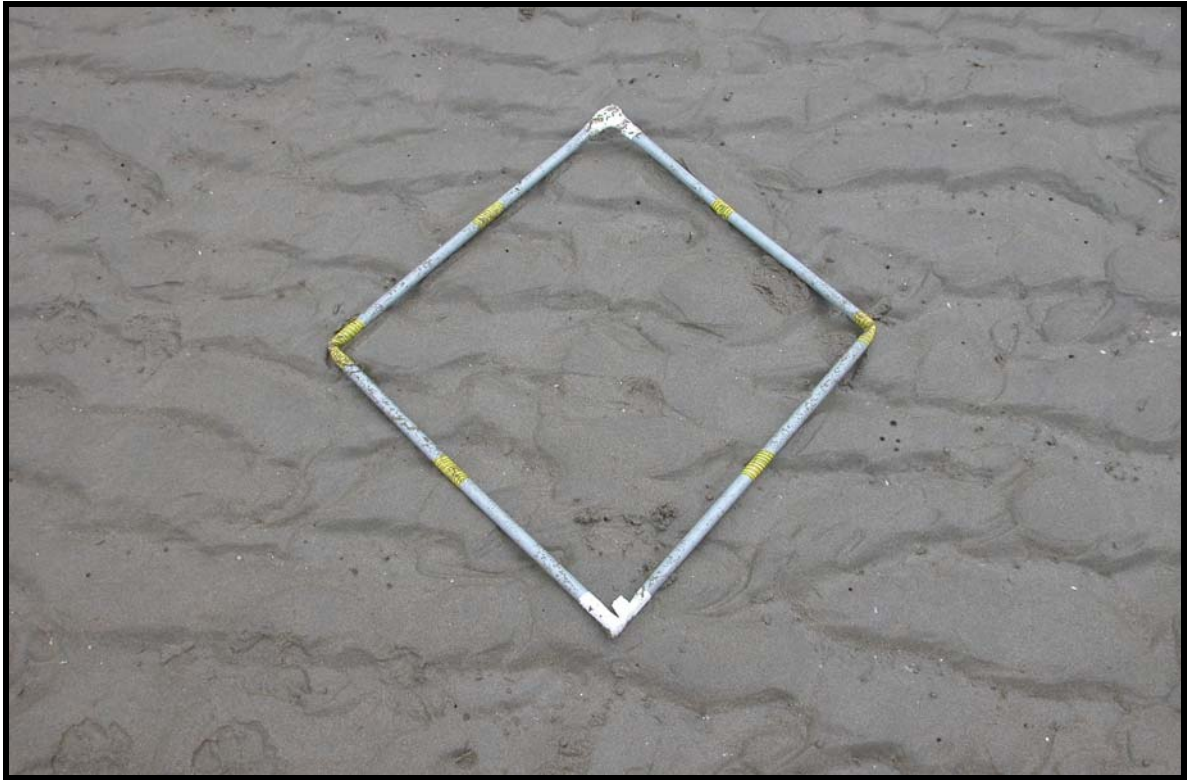
Number of taxa: 36

#### Station description

The station was located west of a series of trestles for oyster cultivation. The sediment consisted of compacted, rippled sand with some *Lanice conchilega* tubes and *Cerastoderma edule* burrows. Live oysters *Ostrea edulis* were also recorded in the area. The faunal community was highly diverse. A total 26 taxa were recorded from direct observation of the sediment surface and from the dug up area and the core sediment samples. Macroinvertebrates recorded included 18 different taxa of polychaetes, 9 taxa of crustaceans and 6 taxa of molluscs. Nematodes, oligochaetes, Chironomidae larvae and tunicates (the sea squirt *Asciidiella scabra*) were also recorded. The faunal assemblage was dominated by the bivalve *Angulus tenuis* and broad range of different polychaete and amphipod species including *Anaitides mucosa*, *Glycera trydactyla*, *Hediste diversicolor*, *Nephtys cirrosa*, *Orbinia latreillii*, *Bathyporeia nana* and *Corophium arenarium*. This was the most diverse station sampled during the survey.

#### Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004)



**Photo 3.6.28.** Transect 5. Station 3. Lower shore. Site No.6 Clew Bay Complex, Co. Mayo.



### 3.7 Site 7. Ballyness Bay, Co. Donegal



Figure 3.7.1. Map showing the location of the transects surveyed in Site No. 7, Ballyness Bay, County Donegal.

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**Site No.7 Ballyness Bay, Co. Donegal****Transect 1**

Location: Ballyness Harbour, 1Km South-west of Machaire Ui Robhartaigh, Co. Donegal

Date: 11.08.06

Transect starting point: 55° 08.440'N, 08° 09.3'W

Exposure: Extremely sheltered

Sediment grain size and organic carbon results:

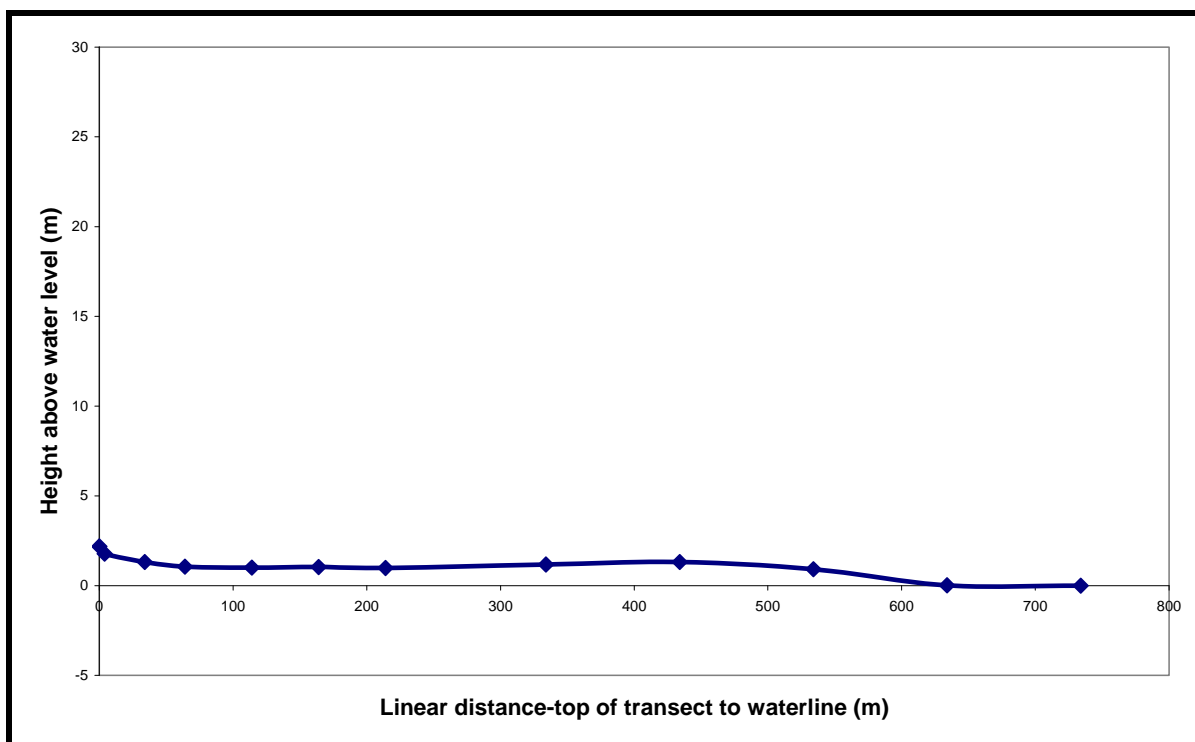
	<b>T1 S1</b>	<b>T1 S2</b>	<b>T1 S3</b>
<b>Ballyness Transect 1</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	3.9	3.38	4.55
Coarse sand	5.91	2.33	3.38
Medium sand	31.68	28.25	50.59
Fine sand	47.21	55.17	40.82
Very fine sand	6.53	7.87	0.7
Silt	4.77	3	0
Total Organic Carbon (C%)	0.24	0.14	0.07

## Site description:

The surveyed site was situated in the western section of a large estuarine system located in the north-west of Ireland (Ballyness Bay). The estuary is extremely sheltered, being almost completely enclosed on its northern face by a long sand dune peninsula that broadens to the north-east leaving only a narrow draining gap. This peninsula protects Ballyness Bay from the prevailing north-westerly winds and the effect of the open water of the Atlantic Ocean. A shore transect was drawn up starting from the gravely-cobblely upper shore and extending on a north-westerly direction until reaching the channel in the middle of the estuary. The sediment changed from stones and cobbles on gravel in the upper shore, where fucoids dominated the algal composition, to muddy sands and fine rippled sandflats in the mid and lower shore. The band of algae on the upper shore ranged from the 2m wide band of *Pelvetia canaliculata* to a narrow band of mixed *Fucus ceranoides* and *Fucus spiralis* followed by a band ca.20m wide of *Ascophyllum nodosum* (70%) and *Fucus ceranoides* (20%). Fauna observed included numerous green crabs *Carcinus maenas* on the upper shore, tubes of spionids and some clumps of mussels *Mytilus edulis*. No talitrids were



recorded from the strand line but 4 specimens were recorded from the core samples taken in the upper shore station. Presence of cockle *Cerastoderma edule* and lugworm *Arenicola marina* was evidenced by numerous burrows and casts recorded.



**Figure 3.7.2.** Transect 1 profile. Site No. 7 Ballyness Bay, Co. Donegal.



**Photo 3.7.1.** View of Transect 1 from the upper littoral. Ballyness Bay, Co. Donegal.

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**Site No. 7 Ballyness Bay, Co. Donegal****Transect 1**Station 1. Upper shore

Location: 55° 08.26'N, 08° 09.39'W

Distance from High Water: 4m

Height above Low Water: 1.78m

Main sediment type: fine to medium sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Hediste diversicolor</i>	6	A	-
<i>Nephtys</i> sp.	-	C	
<i>Nephtys hombergii</i>	3	-	-
<i>Scoloplos armiger</i>	1	-	-
<i>Aricidea catherinae</i>	1	-	-
Spionidae	-	S	S
<i>Malacoceros vulgaris</i>	20	-	-
<i>Pygospio elegans</i>	144	-	-
<i>Spio</i> sp.	4	-	-
<i>Capitella capitata</i>	5	-	-
<i>Capitellides giardi</i>	1	-	-
<i>Manayunkia aestuarina</i>	5	-	-
Tubificidae sp.	1	-	-
<i>Tubificoides</i> spp.	53	-	-
<i>Tubificoides benedii</i>	39	-	-
Enchytraeidae indet.	13	-	-
<i>Synchelidium maculatum</i>	2		-
<i>Talitrus saltator</i>	4		-
<i>Chaetogammarus marinus</i>	1		-

<i>Megaluropus agilis</i>	1	-	-
<i>Corophium</i> sp.	-	C	
<i>Corophium arenarium</i>	17	-	-
<i>Jaera albifrons</i>	2	-	-
<i>Carcinus maenas</i>	1	-	P
<i>Parvicardium minimum</i>	2	-	-
<i>Angulus tenuis</i>	5	-	-

Number of taxa: 26

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	O
<i>Fucus spiralis</i>	C
<i>Ascophyllum nodosum</i>	C

Number of taxa: 3

Station description

The station was located in one clear area in the upper shore within the *Ascophyllum nodosum* band. It consisted of fine sand (47.21%) and medium sand (31.68%). Algal species included green algae *Enteromorpha* sp. and clumps of brown algae *Fucus spiralis* and *Ascophyllum nodosum*. The sediment samples revealed a diverse faunal community (26 taxa and 19 different species of macroinvertebrates) with highest densities belonging to spionid polychaetes (*Pygospio elegans*) and tubificid oligochaetes. Several species of amphipods were present among the dominant polychaete fauna. Bivalves were represented by *Angulus tenuis* and *Parvicardium minimum*.

Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004)



**Photo 3.7.2.** Transect 1. Station 1. Upper shore. Site No.7 Ballyness Bay, Co. Donegal.

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**Site No. 7 Ballyness Bay, Co. Donegal****Transect 1**Station 2. Mid shore

Location: 55° 08.512'N, 08° 09.263'W

Distance from upper shore: 314m

Height above Low Water: 1.18m

Main sediment type: fine sand

Fauna recorded:

<b>Taxon name</b>	<b>Core</b>	<b>Dig</b>	<b>Observed</b>
<i>Scoloplos armiger</i>	3	C	-
<i>Pygospio elegans</i>	7	-	-
<i>Spio sp.</i>	1	-	-
<i>Arenicola marina</i>	-	-	C
<i>Tubificidae sp.</i>	8	-	-
<i>Tubificoides pseudogaster</i>	2	-	-
Crangonidae	1	-	-
<i>Crangon crangon</i>	2	-	C
<i>Cerastoderma edule</i>	1	-	A
<i>Angulus tenuis</i>	3	C	-
<i>Macoma balthica</i>	1	-	-

Number of taxa: 11

Flora recorded:

<b>Taxon name</b>	<b>Observed</b>
<i>Enteromorpha sp.</i>	O

Number of taxa: 1

## Station description

The station was located half-way to low water on the rippled sandflats south of Dooley Peninsula. The green filamentous alga *Enteromorpha* spp. was present on the upper shore, on the furoid band and also on the sandflats beyond it. Some shallow drainage channels were present across the area. The main component of the substrate was fine sand (55.17%) with a thin layer of silt/mud on the surface (3%). Patches of anoxic sediment were observed on the sediment surface. The redox layer was shallow, <2cm. Cockle

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*Cerastoderma edule* siphon holes (10-15/m<sup>2</sup>) were observed along with *Arenicola marina* casts (5-10/m<sup>2</sup>). Faunal diversity and taxa densities were low compared to station 1, due to the more uniform nature of the sediment (fine soft sands). Only 10 macroinvertebrate species were identified from the sediment samples including spionid polychaetes, tubificid oligochaetes, common shrimp *Crangon crangon* and bivalves.

#### Biotope

Similar to 'LS.Lsa.FiSa.Po.Aten Polychaetes and *Angulus tenuis* in littoral fine sand' as listed in the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.7.3.** Transect 1. Station 2. Mid shore. Site No.7 Ballyness Bay, Co. Donegal.



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## Site No. 7 Ballyness Bay, Co. Donegal

### Transect 1

#### Station 3. Lower shore

Location: 55° 08.622' N, 08° 08.782' W

Distance from High Water: 714m

Height above Low Water: 0m

Main sediment type: fine sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Nephtys</i> sp.	-	F	-
<i>Nephtys cirrosa</i>	1	-	-
<i>Scoloplos armiger</i>	2	F	-
<i>Pygospio elegans</i>	2	-	-
<i>Urothoe brevicornis</i>	11	-	-
<i>Bathyporeia gracilis</i>	1	-	-
<i>Bathyporeia tenuipes</i>	1	-	-
<i>Crangon crangon</i>	1	-	P
<i>Angulus tenuis</i>	13	C	-

Number of taxa: 9

#### Station description

The lower shore consisted of more compact medium (50.59%) sand and fine sand (40.82%). Substrate surface was rippled and some patches of anoxic sand were observed. Redox layer was very shallow, the anoxic sediment present just 0.5-1cm below the surface. No fauna was apparently present in the lower shore area apart from the common shrimp *Crangon crangon* in the tidal channels. 8 macroinvertebrate species were reported after faunal analysis of the samples including 1 *Nephtys cirrosa*, 2 spionids, 3 amphipod species, common shrimp *Crangon crangon* and the bivalve *Angulus tenuis*. The commonest species were the amphipod *Urothoe brevicornis* and the bivalve *Angulus tenuis*.

#### Biotope

Similar to 'LS.Lsa.FiSa.Po.Atten Polychaetes and *Angulus tenuis* in littoral fine sand' as listed in the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.7.4** Transect 1. Station 3. Lower shore. Site No. 7 Ballyness Bay, Co. Donegal.

## Site No. 7 Ballyness Bay, Co. Donegal

### Transect 2

Location: Blackrock strand, just north of Ballyness Pier

Date: 11.08.06

Transect starting point: 55° 09.085'N, 08° 06.992'W

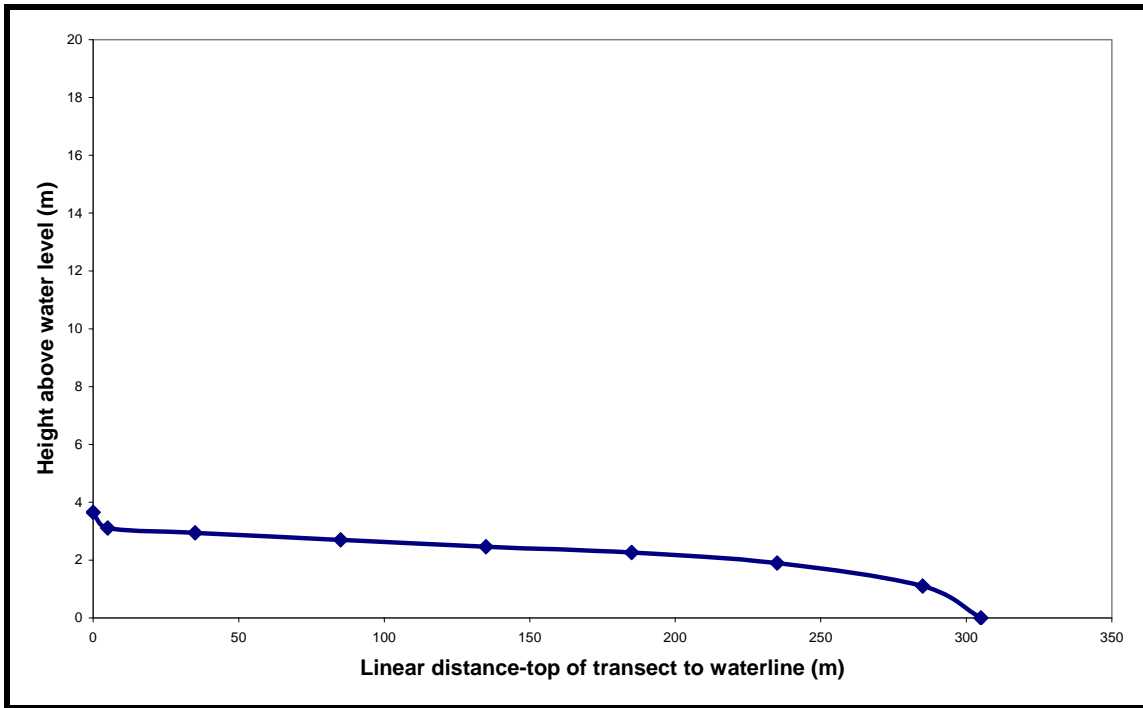
Exposure: Very sheltered

Sediment grain size and organic carbon content:

	<b>T2 S1</b>	<b>T2 S2</b>	<b>T2 S3</b>
<b>Blackrock Transect 2</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	0	0	2.64
Coarse sand	11.73	9.52	7.63
Medium sand	69.44	66.82	57.56
Fine sand	18.83	23.67	31.82
Very fine sand	0	0	0.37
Silt	0	0	0
Total Organic Carbon (C%)	0.16	0.08	0.07

### Site description

Located near the opening gap of Ballyness Estuary, the area consisted of sandflats backed by sand dunes dominated by marram. The transect started at the end of the sand bank and extended westwards until reaching the main drainage channel of the estuary. The sediment type in the top/upper shore consisted of a layer of fine sand (10-20cm.) covering slate bedrock. Dominant sediments on the mid to lower shore were medium-fine rippled sands with reduced sediments on the surface and a shallow redox layer (2-3 cm). Some cobbles were recorded on the lower shore with attached *Fucus vesiculosus*. No other algae were evident and very few fauna were recorded during the transect. The only signs of faunal activity were the casts of the lugworm *Arenicola marina*, present in low densities (1-5/m<sup>2</sup>) in the mid-lower shore. Talitrid amphipods were abundant on the strand line. The sediment was dug up and a sample containing several specimens of *Talitrus saltator* was collected.



**Figure 3.7.3.** Transect 2 profile. Site No. 7 Ballyness Bay, Co. Donegal.



**Photo 3.7.5.** View of Transect 2 from the lower shore station. Ballyness Bay, Co. Donegal.

## Site No. 7 Ballyness Bay, Co. Donegal

### Transect 2

#### Strand line

Location: 55° 09.085'N, 08° 06.992'W

Distance from High Water: 0m

Height above Low Water: 3.65m

Fauna recorded:

Taxon name	Dig	Observed
<i>Talitrus saltator</i>	A	A

#### Station description

The strand line was marked by a sparse band of drift fucoids near the grass bank. Sediment was medium sand with numerous amphipod burrows. Slate bedrock was found digging approximately 20cm into the sediment. *Talitrus saltator* was abundant in the sediment and underneath the algae. Large specimens were collected.

#### Biotope

Similar to 'LS.LSa.St.Tal.Talitrids on the upper shore and strand line' (Connor *et al.*, 2004).



**Photo 3.7.6.** View of the littoral and supralittoral zone from the upper shore station. Ballyness Bay, Co. Donegal.

## Site No. 7 Ballyness Bay, Co. Donegal

### Transect 2

#### Station 1. Upper shore

Location: 55° 09.085'N, 08° 07.003'W

Distance from High Water: 30m

Height above Low Water: 3.11m

Main sediment type: medium sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Scoloplos armiger</i>	2	0	-
<i>Tubificoides benedii</i>	1	-	-
<i>Eurydice pulchra</i>	1	-	-

Number of taxa: 3

#### Station description

Sediment consisted of medium sand (69.44%) and fine sand (18.83%) with very small ripples. Some patches of anoxic sand were observed on the sediment surface. Redox layer was very shallow. No fauna was evident from the direct observations. A total of 3 species were recorded in the core samples and in the dug up area, including 1 polychaete (*Scoloplos armiger*), 1 oligochaete (*Tubificoides benedii*) and the isopod crustacean *Eurydice pulchra*.

#### Biotope

Not listed in the JNCC Marine Classification system.





**Photo 3.7.7.** Transect 2. Station 1. Upper shore. Site No. 7 Ballyness Bay, Co. Donegal.

## Site No. 7 Ballyness Bay, Co. Donegal

### Transect 2

#### Station 2. Mid shore

Location: 55° 09.112'N, 08° 07.163'W

Distance from High Water: 185m

Height above Low Water: 2.26m

Main sediment type: medium to fine sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Malacoceros vulgaris</i>	1	-	-
<i>Pygospio elegans</i>	6	-	-
<i>Scolecopsis squamata</i>	1	-	-
<i>Capitomastus minimus</i>	1	-	-
<i>Arenicola marina</i>	-	-	F
<i>Tubificoides spp.</i>	2	-	-
<i>Corophium arenarium</i>	1	-	-
<i>Echinocardium cordatum</i>	-	-	O

Number of taxa: 8

#### Station description

The station situated on the mid shore consisted of medium to fine rippled sand (66.82% medium sand and 23.67% fine sand) with *Arenicola marina* casts and pits of *Echinocardium cordatum*. The redox layer extended 2 to 3cm into the sediment. The faunal analysis of the sediment samples taken at the mid shore station reported low species diversities and densities, with a total number of 8 taxa observed and identified from the samples. Polychaetes, oligochaetes, 1 amphipod and echinoderms were represented in this station.

## Biotope

Similar to 'LS.LSa.MoSa.AmSco.Sco *Scolecipis* spp. in littoral mobile sand' of the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.7.8.** Transect 2. Station 2. Mid shore. Site No. 7 Ballyness Bay, Co. Donegal.

## Site No. 7 Ballyness Bay, Co. Donegal

### Transect 2

#### Station 3. Lower shore

Location: 55° 09.122'N, 08° 07.290'W

Distance from High Water: ca. 300m

Height above Low Water: 0m

Main sediment type: medium to fine sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Malacoceros fuliginosus</i>	1	-	-
<i>Pygospio elegans</i>	8	-	-
<i>Spio sp.</i>	2	-	-
<i>Capitella capitata</i>	13	-	-
<i>Tubificoides spp.</i>	1	-	-
<i>Angulus tenuis</i>	8	A	-

Number of taxa: 6

#### Station description

Located at the channel edge, the lower shore station consisted of 57.56% medium sand and 27.87% fine sands with hypoxic sediment on the surface and a shallow redox layer (1-2 cm). Some cobbles and shells were present and no fauna was apparent. The faunal analysis of the core samples returned 6 taxa, including 4 different polychaetes, 1 oligochaete and 1 bivalve. The polychaete *Capitella capitata* dominated the sediment along with the spionid polychaete *Pygospio elegans* and the bivalve *Angulus tenuis*.

#### Biotope

Similar to 'Ls.LSa.FiSa.Po.Aten. Polychaetes and *Angulus tenuis* in littoral fine sand' as listed by the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.7.9.** Transect 2. Station 3. Lower shore. Site No. 7 Ballyness Bay, Co. Donegal.

## Site No. 7 Ballyness Bay, Co. Donegal

### Transect 3

Location: east of Finlays Bar, off the car park located 3 km north-east of Falcarragh, Ballyness, Co. Donegal.

Date: 12.08.06

Transect starting point: 55° 09.653'N, 08° 05.215'W

Exposure: very exposed

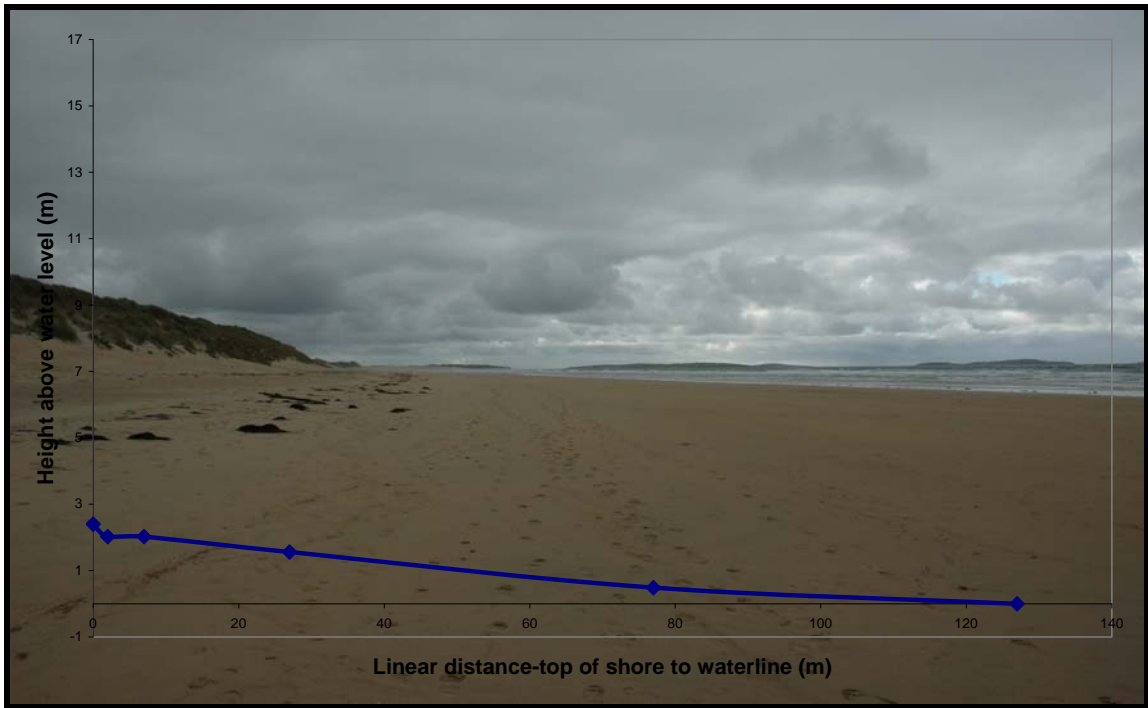
Sediment grain size and organic carbon content:

<b>Gweedore Transect 3</b>	<b>T3 S1 Upper shore</b>	<b>T3 S2 Mid shore</b>	<b>T3 S3 Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	4.92	0.02	4.81
Coarse sand	1.81	23.35	13.65
Medium sand	50.5	58.36	53.35
Fine sand	42.17	18.27	27.87
Very fine sand	0.62	0.01	0.32
Silt	0	0	0

### Site description

The site surveyed was situated in the eastern end of a long strand backed by a sand dune system and extending from the outer side of the gap of Ballyness Bay and ending ca. 5km east. The narrow and slightly sloping strand is completely exposed north to the Atlantic Ocean and consists of a mixture of fine and medium sands. Talitrid amphipods were recorded on the strand line and a sample was collected. Numerous specimens of the buoy barnacle *Dosima fascicularis* were observed stranded along the lower shore.





**Figure 3.7.4.** Transect 3 profile. Site No.7 Ballyness Bay, Co. Donegal.

## Site No. 7 Ballyness Bay, Co. Donegal

### Transect 3

#### Strand line

Location: 55° 09.653'N, 08° 05.215'W

Distance from High Water: 0m

Height above Low Water: 2.4m

Fauna recorded:

Taxon name	Dig	Observed
<i>Talitrus saltator</i>	A	A

Number of taxa: 1

#### Station description

The high water mark was shown by the presence of drift fucoids on the upper littoral. The sediment consisted of medium to fine flat sand with burrows of the amphipod *Talitrus saltator*. Talitrids were present in their burrows and underneath the dead algae. Specimens were collected

#### Biotope

Similar to 'LS.Lsa.St.Tal Talitrids in the upper shore and strand line' described by the JNCC Marine Habitat Classification system (Connor et al., 2004).



**Photo 3.7.10.** Strand line in transect 3. Outside Ballyness Bay, Co. Donegal.

## Site No. 7 Ballyness Bay, Co. Donegal

### Transect 3

#### Station 1 .Upper shore

Location: 55° 09.657' N, 08° 05.213' W

Distance from High Water: 2m

Height above Low Water: 2.02m

Main sediment type: medium-coarse to fine sand

Fauna recorded:

No fauna recorded from the dug area or the core sediment samples.

#### Station description

Compact flat 50.5% medium sand and 42.17% fine sand with no apparent fauna present. No specimens recorded from the faunal analysis of the core samples, the dug over area or observed on the surface.

#### Biotope

Similar to 'LS.Lsa.MoSa.BarSa Barren littoral coarse sand' as listed in the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.7.11.** Transect 3. Station 1. Upper shore. Site No.7 Ballyness Bay, Co. Donegal.

## Site No. 7 Ballyness Bay, Co. Donegal

### Transect 3

#### Station 2. Mid shore

Location: 55° 09.707' N, 08° 05.220' W

Distance from High Water: 77m

Height above Low Water: 0.48m

Main sediment type: medium-coarse to fine sand.

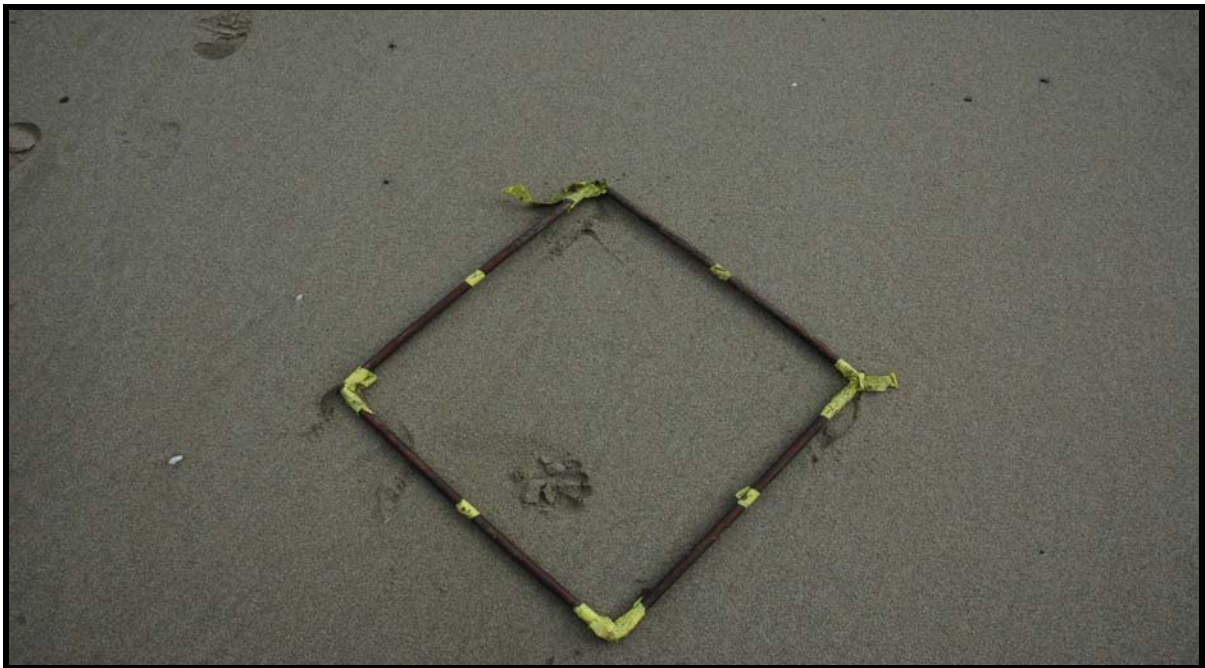
Fauna recorded: None

#### Station description

Mid shore consisted of compact medium to coarse sand (58.36% Medium sand, 23.35% coarse sand, 18.27% fine sand). No fauna were recorded from the direct observations, the dug up area or the core samples.

#### Biotope

Similar to 'LS.Lsa.MoSa.BarSa Barren littoral coarse sand' as listed in the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.7.12.** Transect 3. Station 2. Mid shore. Site No.7 Ballyness Bay, Co. Donegal.

## Site No. 7 Ballyness Bay, Co. Donegal

### Transect 3

#### Station 3. Lower shore

Location: 55° 09.707' N, 08° 05.220' W

Height above Low Water: 0m

Distance from High Water: 134m

Main sediment type: medium to fine sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Aonides oxycephala</i>	1	-	-
<i>Eurydice pulchra</i>	20	C	C
<i>Dosima fascicularis</i>	8 colonies	-	A

Number of taxa: 3

Flora recorded:

Taxon name	Observed
<i>Chorda filum</i> (drift)	P

Number of taxa: 1

#### Station description

Substrate consisted of medium compact sand (53.35%) and fine sand (27.87%) with a deep redox layer and no apparent fauna. Clumps of *Chorda filum* were present near the waterline. Numerous stranded colonies of the buoy barnacle *Dosima fascicularis* were recorded along the strand length. Only 2 macroinvertebrate species were present in the sediment samples, the spionid polychaete *Aonides oxycephala* and the isopod *Eurydice pulchra*.

#### Biotope

Similar to 'LS.LSa.MoSa.AmSco.EurEurydice pulchra in littoral mobile sand' as listed by JNCC Marine Classification system (Connor et al., 2004).





**Photo 3.7.13.** Transect 3. Buoy barnacle *Dosima fascicularis* on the lower shore. Site No.7 Ballyness Bay, Co. Donegal.



### 3.8 Site 8. Lough Swilly, Co. Donegal.



Figure 3.8.1. Survey area map. Site No. 8 Lough Swilly, Co. Donegal.



## Site No. 8 Lough Swilly, Co. Donegal

### Transect 1

Location: North of Rathmelton Channel, between Ballykenny and Ray, in the western shore of Lough Swilly, Co. Donegal.

Date: 09.08.06

Transect starting point: 55° 04.250' N, 07° 35.320' W

Exposure: Moderately exposed

Sediment grain size and organic carbon content

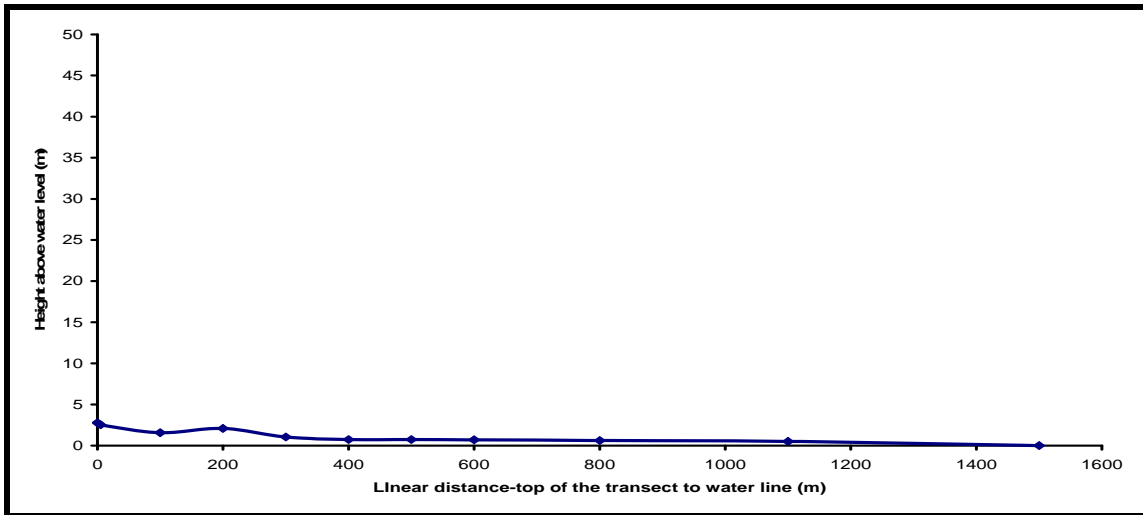
	<b>T1 S1</b>	<b>T1 S2</b>	<b>T1S3</b>
<b>Lough Swilly Transect 1</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	51.12	15.98	0
Very coarse sand	6.71	19.96	0.73
Coarse sand	1.47	9.29	11.98
Medium sand	1.90	12.43	19.99
Fine sand	10.40	12.12	31.11
Very fine sand	24.10	27.11	16.77
Silt	4.30	3.11	19.42
Total Organic Carbon (C%)	1.04	0.92	0.75

### Site description

The site was located on extensive mudflats, on the west side of Lough Swilly, a large north facing sea lough in County Donegal. A transect was delineated on the mudflats extending from Ray Bridge to low water of Lough Swilly on an easternly direction. The upper shore consisted of gravels with shell, cobble, pebble and some boulders and rocks. The upper shore gave way to a gravely substrate with pebbles that extended all the way down across the shore. Scattered rocks and boulders and numerous empty oyster and mussel shells were also present on the sediment surface in the mid and lower shores. Sediments were anoxic approximately 0.5cm below the surface. Several intertidal pools were present along the transect.

As regards to algal distribution patterns and coverage, *Fucus ceranoides* (50% cover) on the upper littoral was replaced by *Ascophyllum nodosum* (over 70% cover) in the upper/mid littoral zone. The *Ascophyllum* band was gradually replaced by *Fucus*

*vesiculosus* (50%) for most of the following 100m. *Fucus serratus* (on scattered rocks and stones) was the dominant furoid on the mid and lower shores (1km band). Several algal species were recorded on the lower shore (lower eulittoral), among them *Chondrus crispus*, *Enteromorpha intestinalis*, *Ulva lactuca* and *Chorda filum*. Of the fauna observed, it is worth noting the presence of scattered sponges across the gravely mudflat surface. Towards the lower eulittoral numerous clumps of *Mytilus edulis* and individual specimens of live *Aequipecten opercularis* were common. *Cerastoderma edule* was common along with *Arenicola marina*, *Crangon crangon* in the tidal pools, green crabs *Carcinus maenas* and littorinids and barnacles on rocks and among the algae fronds. *Nephtys*, glycerids, *Nereis* and capitellids were recorded in the dug over areas. Talitrids were recorded and collected from the strand line.



**Figure 3.8.2.** Transect 1 profile. Site No. 8 Lough Swilly, Co. Donegal.



**Photo 3.8.1.** Panoramic view of Transect 1 from the strand line. Lough Swilly, Co. Donegal.

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 1

#### Strand line

Location: 55° 04.250'N, 07° 35.920'W

Distance from High Water: 0m

Height above Low Water: 2.77m

Main sediment type: gravel and sand

Fauna recorded:

Taxon name	Dig	Observed
<i>Talitrus saltator</i>	A	A

Number of taxa: 1

#### Station description

Located less than 1m from a concrete road below the main road and near a slipway, the strand line consisted of sand, gravel and drift *Ascophyllum nodosum* indicating the location of the high water mark. Talitrids were abundantly present under the fucoids. Specimens were collected.

#### Biotope

Similar to 'LS.Lsa.St.Tal Talitrids in the upper shore and strand line' described by the JNCC Marine Habitat Classification system (Connor *et al.*, 2004).



**Photo 3.8.2.** View of the upper littoral zone in Transect 1. Lough Swilly, Co. Donegal.

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 1

#### Station 1. Upper Shore

Location: 55° 04.15' N, 07° 35.55' W

Distance from High Water: 5m

Height above Low Water: 2.52m

Main sediment type: gravel

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Eteone longa</i>	3	-	-
<i>Glycera</i> sp.	-	O	-
<i>Hediste diversicolor</i>	-	O	-
<i>Nephtys</i> sp.	-	O	-
<i>Malacoceros vulgaris</i>	1	-	-
<i>Pygospio elegans</i>	7	-	-
<i>Spio</i> sp.	2	-	-
<i>Capitella capitata</i>	6	-	-
<i>Arenicola marina</i>	-	-	F
<i>Tubificoides pseudogaster</i>	1	-	-
<i>Tubificoides benedii</i>	24	-	-
Corophiidae sp.	-	A	-
<i>Corophium arenarium</i>	33	-	-
<i>Cerastoderma edule</i>		-	O
<i>Angulus tenuis</i>	3	P	-
<i>Macoma balthica</i>	12	C	-

Number of taxa: 16

Flora recorded:

Taxon name	Observed
<i>Fucus ceranoides</i>	A
<i>Ascophyllum nodosum</i>	C

Number of taxa: 2

### Station description

The upper shore was backed by a protection wall. The sediment consisted of muddy gravel (51.12% gravel) with stones and boulders. *Fucus ceranoides* was restricted to the littoral fringe, covering ca. 50% of the substrate giving way to the eulittoral zone which was dominated by *Ascophyllum nodosum* with some *Fucus ceranoides* on the transition zone. The feeding casts of the lugworm *Arenicola marina* and cockle *Cerastoderma edule* siphon holes were recorded in some patches of mud in the upper eulittoral. A few polychaetes (genus *Nephtys*, genus *Glycera* and *Hediste diversicolor*), amphipods (family Corophiidae) and bivalves (*Angulus tenuis* and *Macoma balthica*) were recorded after digging up an area of 1m<sup>2</sup>. A total of 10 taxa were recorded from the core samples. The bivalve *Macoma balthica*, the amphipod *Corophium arenarium* and the oligochaete *Tubificoides benedii* were the dominant species.

### Biotope

Similar to 'LS.LMx.GvMu.HedMx.Mac *Hediste diversicolor* and *Macoma balthica* in littoral gravelly mud' as listed in the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.8.3.** Transect 1. Station 1. Upper Shore. Site No. 8 Lough Swilly, Co. Donegal.



## Site No. 8 Lough Swilly, Co. Donegal

### Transect 1

#### Station 2. Mid shore

Location: 55° 04.473'N, 07° 35. 917'W

Distance from High Water: 500m

Height above Low Water: 0.74m

Main sediment type: mixture of poorly sorted sand and gravel

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Myxilla incrustans</i>	-	-	C
<i>Eteone longa</i>	1	-	-
<i>Glycera</i> sp.	-	O	-
<i>Glycera tridactyla</i>	3	-	-
<i>Nephtys hombergii</i>	3	-	-
<i>Scoloplos armiger</i>	1	-	-
<i>Aonides oxycephala</i>	1	-	-
<i>Pygospio elegans</i>	11	-	-
<i>Polydora ciliata</i>	1	-	-
<i>Caulleriella alata</i>	1	-	-
<i>Euclymene oerstedii</i>	10	-	-
Capitellidae sp.	-	O	-
<i>Arenicola marina</i>	-	-	F
<i>Tubificoides</i> spp.	16	-	-
<i>Semibalanus balanoides</i>	1	-	P
<i>Crangon crangon</i>	1	-	A
<i>Carcinus maenas</i>	3	-	P
<i>Littorina</i> spp.	-	-	F
<i>Mytilus edulis</i>	3	-	O
<i>Lucinoma borealis</i>	1	O	-
<i>Parvicardium minimum</i>	1	-	-
<i>Cerastoderma edule</i>	4	F	C
<i>Scrobicularia plana</i>	1	-	-

Number of taxa: 23

Flora recorded:

Taxon name	Observed
<i>Fucus vesiculosus</i>	F

Number of taxa: 1

#### Station description

The mid shore station was situated approximately halfway from the beginning of the transect, on the gravely mudflats that dominated the area. Very mixed sand characterised the substrate, followed by 15.98% of gravel with a layer of silt. Some shells and pebbles were also present on the sediment surface. *Fucus vesiculosus* (10%-20% cover) was recorded attached to pebbles and small stones. Green crab *Carcinus maenas*, maldanid polychaete tubes, cockle *Cerastoderma edule* siphons, scattered casts of *Arenicola marina* and the sponge *Myxilla incrustans* were the fauna recorded from the direct observations. The faunal assemblage recorded from the 1m<sup>2</sup> dug up area and the core samples was very diverse, being dominated by *Euclymene oerstedii* (a maldanid polychaete or bamboo worm), the spionid *Pygospio elegans*, tubificid oligochaetes, *Glycera tridactyla*, *Nephtys hombergii* and *Cerastoderma edule*. Abundances of each taxa were very low.

#### Biotope

Not listed in the JNCC Marine Classification system.



**Photo 3.8.4.** Transect 1. Station 2. Mid shore. Site No.8 Lough Swilly, Co. Donegal.

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 1

#### Station 3. Lower shore

Location: 55° 04.220' N, 07° 35.718' W

Distance from High Water 1500m

Height above Low Water: 0m

Main sediment type: mixed sand and silt.

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Myxilla incrustans</i>	-	-	O
<i>Syllidia armata</i>	2	-	-
<i>Hediste diversicolor</i>	1	-	-
<i>Lumbrineris gracilis</i>	4	-	-
<i>Scoloplos armiger</i>	12	C	-
<i>Notomastus latericeus</i>	9	-	-
<i>Arenicola marina</i>	-	-	F
<i>Lagis koreni</i>	1	-	-
<i>Pomatoceros triqueter</i>	15 (on shells)	-	P
<i>Tubificoides spp.</i>	4	-	-
<i>Semibalanus balanoides</i>	-	-	P
<i>Corophium arenarium</i>	2	-	-
<i>Crangon crangon</i>	1	-	C
<i>Mytilus edulis</i>	-	-	C
<i>Ostrea edulis</i>	-	-	O
<i>Aequipecten opercularis</i>	-	-	O
<i>Thyasira flexuosa</i>	4	-	-
<i>Mysella bidentata</i>	1	-	-
<i>Parvicardium minimum</i>	1	-	-
<i>Cerastoderma edule</i>	-	F	C
<i>Spisula subtruncata</i>	1	-	-
<i>Scrobicularia plana</i>	2	-	-
<i>Tapes decussatus</i>	2	F	-
<i>Mya arenaria</i>	1	-	-

<i>Corbula gibba</i>	1	-	-
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Number of taxa: 25

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	O
<i>Fucus serratus</i>	F
Rhodophycota sp.	O

Number of taxa: 3

#### Station description

A compact shelly substrate dominated the lower shore. The sediment consisted of muddy sand (31.11% fine sand, 19.99% medium sand, 16.77% very fine sand and 19.42% silt) with scattered empty shells of gastropods and bivalves. Algal taxa recorded included *Enteromorpha* sp., *Fucus serratus* and red algae (Rhodophycota) sparsely covering the sediment surface. *Ostrea edulis* and *Aequipecten opercularis*. Mussels *Mytilus edulis* were commonly recorded in large aggregations from the mid to the lower shore. Common cockle *Cerastoderma edule* siphons were recorded along with *Arenicola marina* casts. Rafts for oyster cultivation were observed in the distance. Some *Zostera* patches were also recorded on the lower eulittoral band in the nearby area. A total 24 taxa were recorded, 18 of which identified from the core sediment samples. The polychaete *Scoloplos armiger* was the most abundant species (12 individuals). The remaining species were recorded in very low densities. It is worth noting that 12 of the 25 species were bivalves, this being the station with the highest diversity of these molluscs.

#### Biotope

Not listed in the JNCC Marine Classification system.



**Photo 3.8.5.** Transect 1. Station 3. Lower shore. Site No.8 Lough Swilly, Co. Donegal.



## Site No. 8 Lough Swilly, Co. Donegal

### Transect 2

Location: south-east of Aughnish Island, South of Rathmelton, Lough Swilly.

Date: 09.08.06

Transect starting point: 55° 03.125'N, 07° 34.868'W

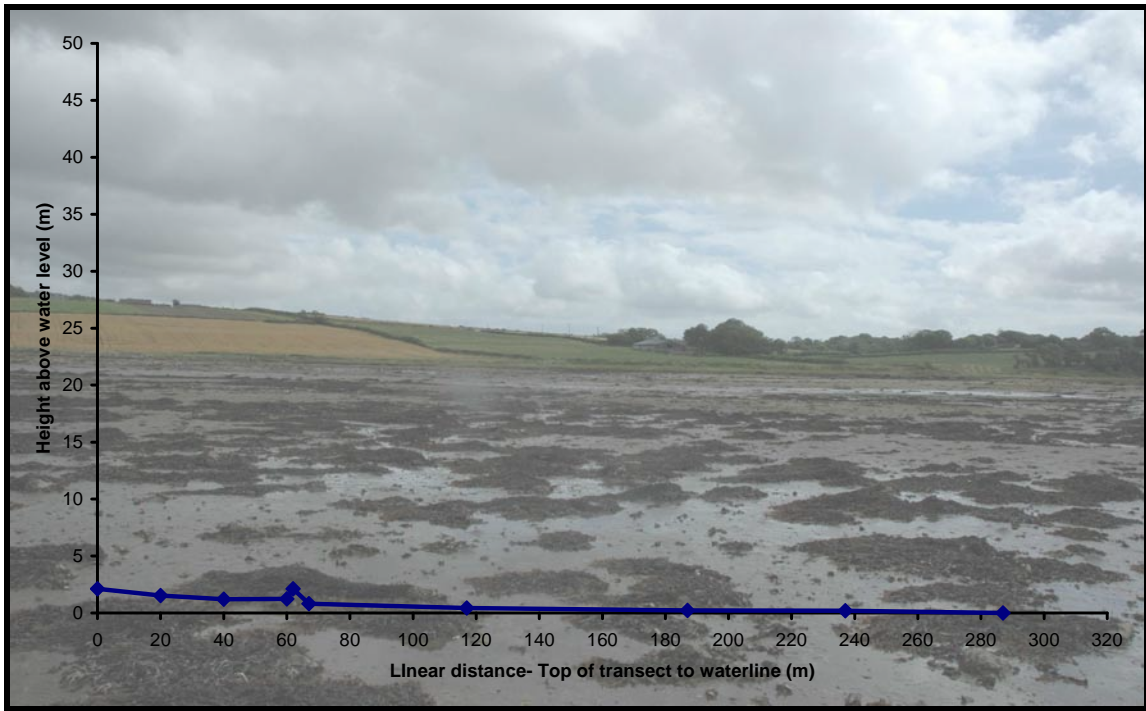
Exposure: moderately exposed

Sediment grain size and organic carbon content

	<b>T2 S1</b>	<b>T2 S2</b>	<b>T2 S3</b>
<b>Lough Swilly Transect 2</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	34.82	0	22.64
Very coarse sand	18.60	5.48	5.33
Coarse sand	11.19	3.3	2.66
Medium sand	12.54	1.8	3.76
Fine sand	17.47	9.17	13.73
Very fine sand	4.75	12.9	45.48
Silt	0.62	67.35	6.40
Total Organic Carbon (C%)	1.00	1.83	0.86

### Site description

The transect was located in a moderately exposed embayment situated in the west shore of Lough Swilly, County Donegal. The area was protected by a small island to the north-east and consisted of gravely/shelly mudflats over a layer of clay. The upper shore was made of shell and pebble before the mudflats started. The mudflat extended ca.40m before being interrupted by a ridge of cobble and pebble on medium sand 1.30m high. Exposed clay was the dominant feature in the midshore to be replaced again by gravel and fine sand in the lower shore. *Fucus ceranoides* was present on the upper shore, *Ascophyllum nodosum* on the mid-shore to lower shore and *Fucus vesiculosus* and *Fucus serratus* were the dominant algal species on the lower shore. A notable feature of the surveyed area was the presence of exposed trunks and roots of trees in the clay that characterised much of the mid shore in this transect. Talitrids were observed and collected from the strand line.



**Figure 3.8.3.** Transect 2 profile. Site No. 8 Lough Swilly, Co. Donegal.

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 2

#### Strand line

Location: 55° 03' .07' N, 07° 34.52' W

Distance from High Water: 0m

Height above Low Water: 2.12

Main sediment type: coarse sand and gravel.

Fauna recorded:

<b>Taxon name</b>	<b>Dig</b>	<b>Observed</b>
<i>Talitrus saltator</i>	C	C

Number of taxa: 1

#### Station description

A narrow band of sand and drift fucoids were observed in the high water mark, just 30 cm from the edge of the grassy clay bank in the supralittoral area. Talitrids were observed and collected.

#### Biotope

Similar to 'LS.Lsa.St.Tal Talitrids in the upper shore and strand line' described by JNCC Marine Habitat Classification system (Connor et al., 2004).

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 2

#### Station 1. Upper Shore

Location: 55° 03.118'N, 07° 34.87'W

Distance from High Water: 20m

Height above Low Water: 1.53m

Main sediment type: gravel on poorly sorted sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Tubificoides benedii</i>	3	-	-

Number of taxa: 1

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	0

Number of taxa: 1

#### Station description

The sediment consisted of firm sandy gravel (34.82% gravel). Some *Enteromorpha* sp. was present. No fauna was recorded by direct observations or after digging up the sediment. The faunal analysis of the core samples only reported 3 specimens of the oligochaete *Tubificoides benedii*.

#### Biotope

Similar to LS.Lsa.MoSa.Ol.FS as listed in the JNCC Classification system (Connor *et al.*, 2004).



**Photo 3.8.6.** Transect 8. Station 1.Upper shore. Site No.8 Lough Swilly, Co. Donegal.

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 2

#### Station 2. Mid shore

Location: 55° 03.173' N, 07° 34.972' W

Distance from High Water: 97m

Height above Low Water: 0.44m

Main sediment type: clay, fine sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Glycera sp.</i>	2	C	-
<i>Glycera tridactyla</i>	1	-	-
<i>Hediste diversicolor</i>	1	O	-
<i>Nephtys hombergii</i>	1	O	-
<i>Arenicola marina</i>	1	O	F
<i>Tubificoides benedii</i>	2	-	-
<i>Cerastoderma edule</i>		-	O
<i>Corbula gibba</i>	1	-	-

Number of taxa: 8

#### Station description

The station was located on an area immediately behind a ridge of pebble and shells. The sediment consisted mainly of mud and clay (67.35% silt) with a very shallow redox layer. Large patches of exposed clay were visible in the nearby area. Some *Cerastoderma edule* burrows and *Arenicola marina* casts were observed on the sediment surface. Taxonomic analysis of the fauna contained in the samples revealed 7 different taxa the majority of which were polychaetes.

#### Biotope

Not listed in the JNCC Marine Classification system.





**Photo 3.8.7.** Transect 2. Station 2. Mid shore. Site No.8 Lough Swilly, Co. Donegal.

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 2

#### Station 3. Lower shore

Location: 55° 03.213' N, 07° 35.058' W

Distance from High Water 234m

Height above Low Water: 0m

Main sediment type: gravel and fine sand

Fauna recorded:

Taxon name	Core	Dig	Observed
Tipulidae indet.	2	-	-
<i>Eteone longa</i>	1	-	-
<i>Hediste diversicolor</i>	24	A	-
<i>Pygospio elegans</i>	24	-	-
<i>Arenicola marina</i>	1	-	F
<i>Tubificoides pseudogaster</i>	27	-	-
<i>Tubificoides benedii</i>	2	-	-
<i>Cerastoderma edule</i>	2	O	F
<i>Macoma balthica</i>	31	A	-
<i>Scrobicularia plana</i>	3	C	-

Number of taxa: 10

Flora recorded:

Taxon name	Observed
<i>Enteromorpha</i> sp.	O

Number of taxa: 1

#### Station description

The sediment was 45.48% fine sand and 22.64% gravel. Some filamentous green algae *Enteromorpha* sp. were present on the surface. No other apparent fauna was reported from the direct observations apart from low densities of *Arenicola marina*

casts and *Cerastoderma edule* burrows. After digging up the sediment the ragworm *Hediste diversicolor* and the bivalves *Macoma balthica* and *Scrobicularia plana* were recorded. The results of the faunal analysis reported 10 taxa, the most abundant of which were *Macoma balthica*, *Tubificoides pseudogaster*, *Hediste diversicolor* and *Pygospio elegans*.

#### Biotope

Similar to 'LS.LMx.GvMu.HedMx.Mac *Hediste diversicolor* and *Macoma balthica* in littoral gravelly mud' (Connor *et al.*, 2004).



**Photo 3.8.8.** Transect 2. Station 3. Lower shore. Site No.8 Lough Swilly, Co. Donegal.

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 3

Location: 3km southeast of Ballygreen Point, Inner Lough Swilly

Date: 10.08.06

Transect starting point: 55° 01.295' N, 07° 34.977' W

Exposure: sheltered

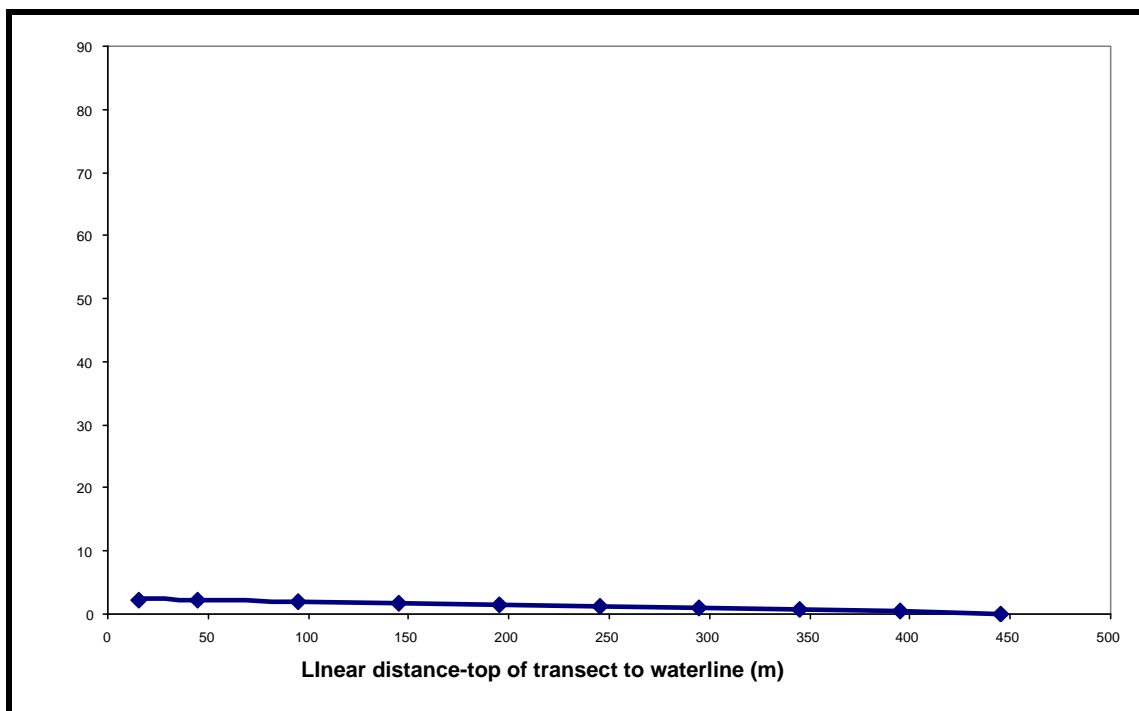
Sediment grain size and organic carbon content

	<b>T3 S1</b>	<b>T3S2</b>	<b>T3 S3</b>
<b>Lough Swilly Transect 3</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	31.73	0	20.13
Very coarse sand	15.77	1.24	13.52
Coarse sand	8.68	4.4	9.87
Medium sand	11.05	5.76	9.51
Fine sand	18.42	17.62	9.70
Very fine sand	13.57	12.44	32.17
Silt	0.77	58.54	5.09
Total Organic Carbon (C%)	0.83	1.48	1.07

### Site description

Located on inner Lough Swilly, the transect commenced on an upper shore dominated by gravel and pebbles with some scattered boulders. The mud content increased ca. 50m towards the shore giving way to mudflats with clumps of *Ascophyllum nodosum* and numerous casts of *Arenicola marina*. The upper shore was dominated by *Pelvetia canaliculata* on a 1m wide band before being substituted by the *Fucus ceranoides* band in the next 10m. *Ascophyllum nodosum* and *Fucus vesiculosus* dominated for most of the upper eulittoral to the mid eulittoral, with *Fucus serratus* found in the lower areas of the *Ascophyllum* zone. *Fucus vesiculosus* and *Fucus serratus* were the dominant algal species, with the latter being the only species recorded in the lower shores in the lower eulittora. Numerous talitrids were recorded from the strand line under the debris and dried fucoids. Some specimens were collected. The lugworm *Arenicola marina* was present from the mid to the lower shores. Other species recorded

included sponges, *Cerastoderma edulis*, periwinkles, mussels and *Aequipecten opercularis*.



**Figure 3.8.4.** Transect 3 profile. Site No.8 Lough Swilly, Co. Donegal.



**Photo 3.8.9.** View of Transect 3 from the strand line. Lough Swilly, Co. Donegal.

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 3

#### Strand line

Location: 55° 01.295'N, 07° 34.977'W

Distance from High Water: 0m

Height above Low Water: 4.98m

Main sediment type: gravel, cobble and pebble.

Fauna recorded:

<b>Taxon name</b>	<b>Dig</b>	<b>Observed</b>
<i>Talitrus saltator</i>	S	S

Number of taxa: 1

#### Station description

The area above the high water mark line (EHWS) was less than 1m wide. The sediment was characterised by gravely sand, cobbles, pebbles, shells and drift fucoids (*Ascophyllum nodosum*, *Fucus vesiculosus*). Superabundant talitrids were present underneath the mats of dead fucoids. No burrows were present.



## Site No. 8 Lough Swilly, Co. Donegal

### Transect 3

#### Station 1. Upper Shore

Location: 55° 01.17 N, 07° 34.58' W

Distance from High Water: 15m

Height above Low Water: 2.46m

Main sediment type: gravel with cobbles and pebbles

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Eteone longa</i>	2	-	-
<i>Glycera tridactyla</i>	2	-	-
<i>Hediste diversicolor</i>	14	A	-
<i>Scoloplos armiger</i>	1	-	-
<i>Pygospio elegans</i>	5	-	-
<i>Capitella capitata</i>	2	-	-
<i>Lagis koreni</i>	2	-	-
<i>Tubificoides</i> spp.	73	-	-
<i>Tubificoides benedii</i>	1	-	-
<i>Euridyce pulchra</i>	1	-	-
<i>Carcinus maenas</i>	1	-	P
<i>Scrobicularia plana</i>	2	O	-

Number of taxa: 12

#### Station description

The upper shore was backed by a stone wall and it consisted of 31.73% gravel and 67.49% sand with cobbles, pebbles and stones. Some scattered boulders were also present. The first 2m of the upper shore was dominated by *Pelvetia canaliculata*, followed by *Fucus ceranoides* (40% cover) and some *Ascophyllum nodosum* (10%). *Ascophyllum nodosum* dominated the upper eulittoral for the next 50m mixed with *Fucus vesiculosus* and *Fucus serratus* in the mid-lower eulittoral. As regards to fauna a total 12 taxa were recorded from the upper shore dominated by tubificid oligochaetes and *Hediste diversicolor*.

Biotope

Similar to 'LS.LMx.GvMu.HedMx.Scr *Hediste diversicolor* and *Scrobicularia plana* in littoral gravelly mud' as listed in the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.8.10.** Transect 3. Station 1. Upper shore. Site No.8 Lough Swilly, Co. Donegal.

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 3

#### Station 2. Mid shore

Location: 55° 01.285' N, 07° 34.767' W

Distance from High Water: 245m

Height above Low Water: 1.26m

Main sediment type: muddy sand

Fauna recorded:

Taxon name	Core	Dig	Observed
Nemertea sp.	1	-	-
<i>Hediste diversicolor</i>	5	C	-
<i>Nephtys</i> sp.	1	O	-
<i>Nephtys hombergii</i>	5	-	-
<i>Scoloplos armiger</i>	1	-	-
<i>Polydora socialis</i>	2	-	-
<i>Pygospio elegans</i>	3	-	-
<i>Capitella capitata</i>	2	-	-
<i>Arenicola marina</i>		-	A
<i>Tubificoides benedii</i>	13	-	-
<i>Urothoe brevicornis</i>	1	-	-
<i>Corophium arenarium</i>	1	-	-
Decapoda sp.	1	-	P
<i>Carcinus maenas</i>	1	-	-
<i>Littorina</i> sp.	-	-	A
<i>Mytilus edulis</i>	1	-	-
<i>Cerastoderma edule</i>		-	A
<i>Abra tenuis</i>	1	-	-
<i>Scrobicularia plana</i>	1	-	-

Number of taxa: 19

Flora recorded:

Taxon name	Observed
<i>Fucus spiralis</i>	C
<i>Ascophyllum nodosum</i>	C

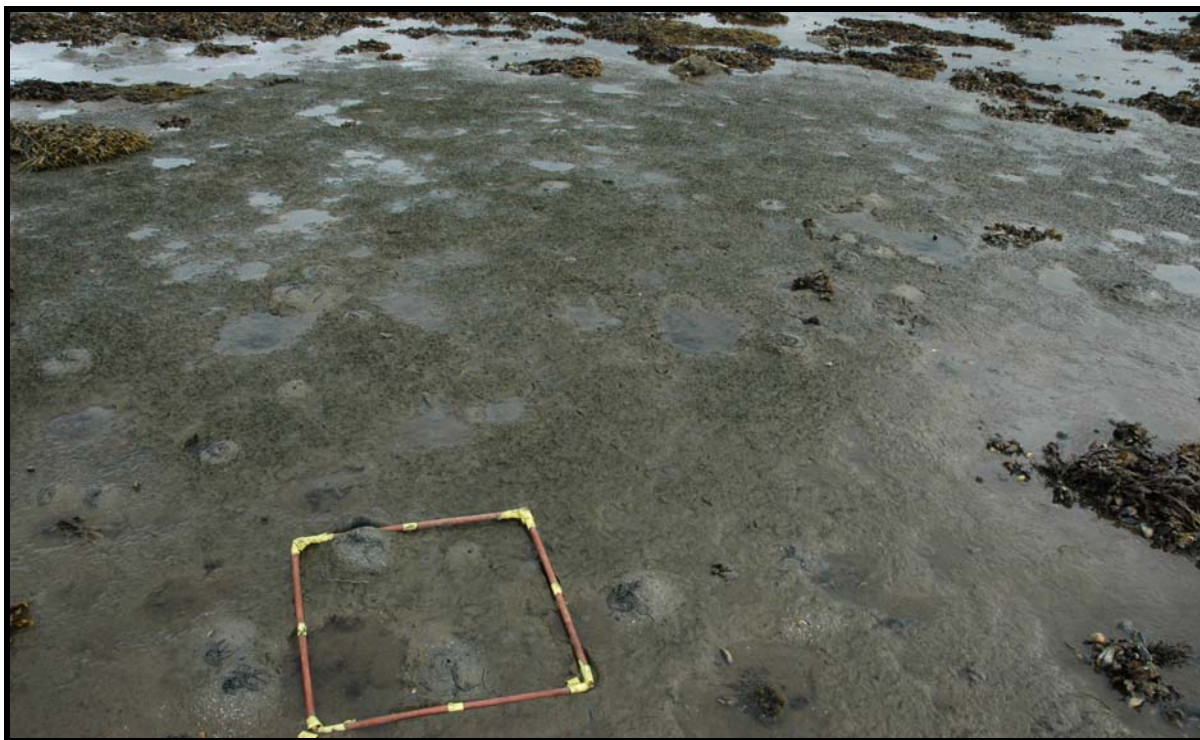
Number of taxa: 2

#### Station description

Located on the edge of the gravely mud and the start of the soft mudflat, the mid shore station was a mixture of mud (58.54%) and fine sand. *Ascophyllum nodosum* was present along with some *Fucus spiralis*. *Arenicola marina* casts (5-10/m<sup>2</sup>) were the dominant sign of faunal activity along with siphon holes of common cockle *Cerastoderma edule*, periwinkles and shrimp burrows. The analysis of the core samples returned 16 different taxa including 8 species of polychaetes, 5 different taxa of molluscs and 3 species of crustaceans. The faunal assemblage was very heterogenous, with relatively high species numbers and low abundances.

#### Biotope

Similar to 'LS.Lmu.Uest.Hed.Ol. *Hediste diversicolor* and oligochaetes in littoral mud' as listed in the JNCC Marine Classification system (Connor *et al.*, 2004).



**Photo 3.8.11.** Transect 3. Station 2 (Mid shore). Site No. 8 Lough Swilly, Co. Donegal.

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 3

#### Station 3. Lower shore

Location: 55° 01.290'N, 07° 34.388'W

Distance from top shore: 450m

Height above Low Water: 0m

Main sediment type: gravely sand

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Myxilla incrustans</i>	-	-	P
<i>Halichondria panicea</i>	-	-	P
<i>Harmothoe spinifera</i>	2	-	-
<i>Eteone longa</i>	1		-
<i>Anaitides mucosa</i>	2	-	-
Glycera sp.	-	O	-
<i>Glycera tridactyla</i>	11	-	-
<i>Scoloplos armiger</i>	5	-	-
<i>Prionospio fallax</i>	3	-	-
<i>Pygospio elegans</i>	13	-	-
<i>Caulleriella alata</i>	1	-	-
<i>Cirriformia tentaculata</i>	1	-	-
<i>Euclymene oerstedii</i>	5	-	-
<i>Ampharete finmarchica</i>	1	-	-
<i>Amphitrite cirrata</i>	1	-	-
Terebellidae sp.	1	-	P
Spirorbidae sp.	-	-	P
<i>Tubificoides spp.</i>	6	-	-
<i>Tubificoides pseudogaster</i>	1	-	-
<i>Tubificoides benedii</i>	4	-	-
<i>Semibalanus balanoides</i>	-	-	P
<i>Echinogammarus marinus</i>	1	-	-
<i>Cheirocratus sundevallii</i>	1	-	-
<i>Crangon crangon</i>	-	-	O

<i>Mytilus edulis</i>	-	-	C
<i>Aequipecten opercularis</i>	-	-	C
<i>Cerastoderma edule</i>	-	-	F
<i>Mysella bidentata</i>	2	-	-
<i>Abra tenuis</i>	1	-	-

Number of taxa: 29

Flora recorded:

Taxon name	Observed
<i>Fucus vesiculosus</i>	O
<i>Fucus serratus</i>	C
<i>Ascophyllum nodosum</i>	O
Rhodophycota spp.	R

Number of taxa: 1

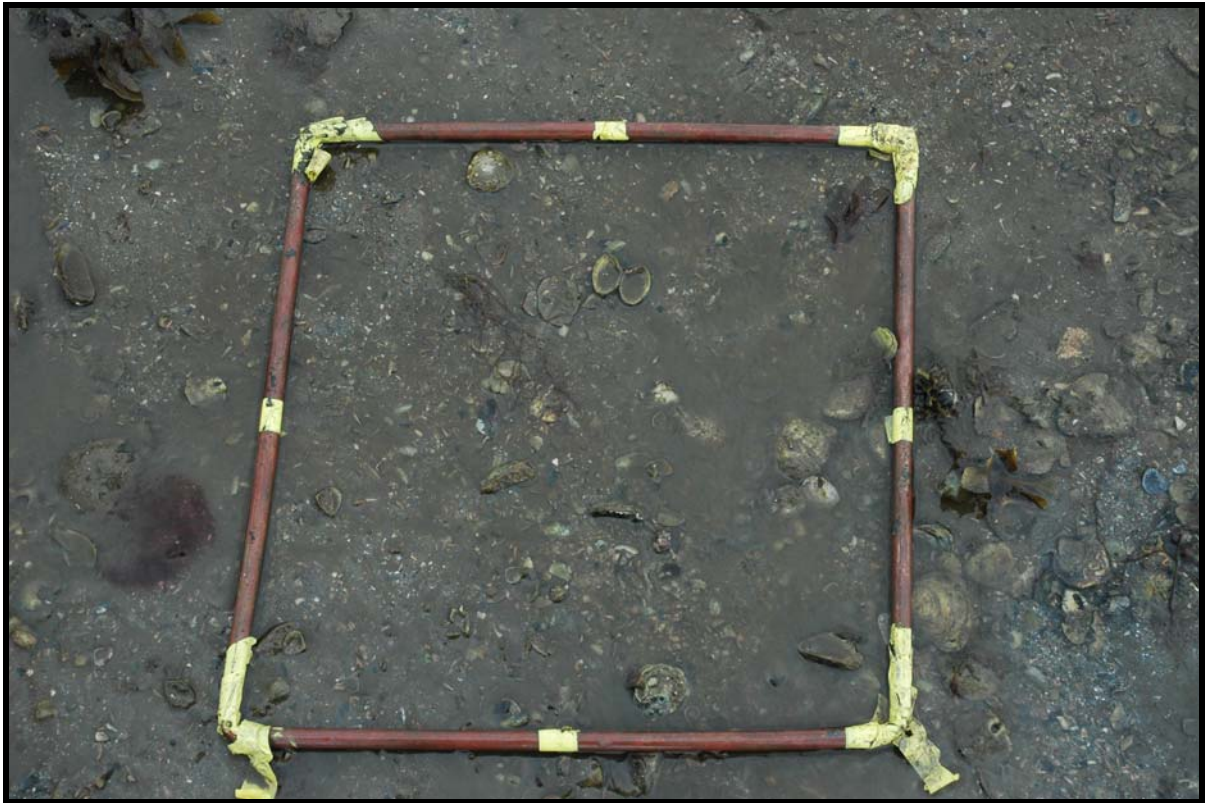
Station description

The lower shore station consisted of gravely sand (20.13% gravel, 32.17% fine sand) and numerous empty shells on the silty surface layer. The brown algae species *Fucus serratus* and *Fucus spiralis* were present along with some *Ascophyllum nodosum*. Red algae (Rhodophycota spp.) were also recorded. Fauna observed included spirorbids attached to the algae, mussel *Mytilus edulis* and queen scallop *Aequipecten opercularis* were common in moderate size clumps. Sponges such as *Myxilla incrustans* and *Halichondria panicea* were present attached to rocks and shells. *Arenicola marina* was also recorded but only in the muddier areas. A total of 20 different taxa were identified from the core samples. The polychaetes *Glycera tridactyla* and *Pygospio elegans* were the most abundant species. The remaining 18 taxa included low densities of polychaetes (13 taxa), oligochaetes (3 taxa), crustaceans (4 taxa) and bivalves (5 taxa). This was the third most diverse station sampled during the survey with a total 29 faunal records.

Biotope

Not listed in the JNCC Marine Classification system (Connor *et al.*, 2004).





**Photo 3.8.12.** Transect 3. Station 3 (Lower shore). Site No.8 Lough Swilly, Co. Donegal.



**Photo 3.8.13.** Transect 3. Station 3. *Myxilla incrustans* and *Mytilus edulis*. Lower shore. Site No.8 Lough Swilly, Co. Donegal.

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 4

Location: Castlewray, southwestern shore of Inner Lough Swilly.

Date: 10.08.06 (on shore sampling) & 02.10.06 (boat survey)

Transect starting point: 54° 58.53' N, 07° 39.88' W

Exposure: Extremely sheltered

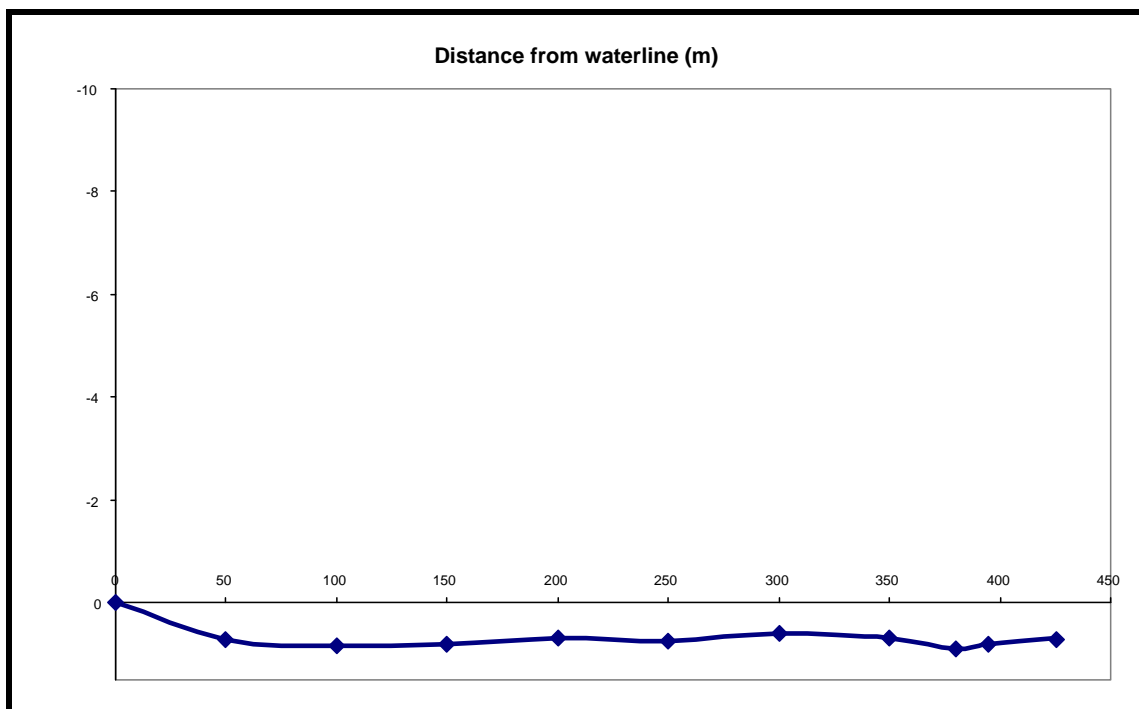
Sediment grain size and organic carbon content

	<b>T4 S1</b>	<b>T4 S2</b>	<b>T4 S3</b>
<b>Lough Swilly Transect 4</b>	<b>Upper shore</b>	<b>Mid shore</b>	<b>Lower shore</b>
Sediment Type	(%)	(%)	(%)
Gravel	0	0	0
Very coarse sand	9.61	0.12	0.1
Coarse sand	4.8	1.36	1.62
Medium sand	0.33	0.33	1.32
Fine sand	7.85	11.56	12.2
Very fine sand	10.4	24.23	21.13
Silt	67.01	62.4	63.62
Total Organic Carbon (C%)	2.58	1.33	1.32

### Site description

The area surveyed was situated in an extremely sheltered location in Inner Lough Swilly. The area consisted of patches of *Spartina anglica* saltmarsh backed by grassland in the supralittoral area and extending ca. 50m down towards the shore, giving way to bare mudflats. The muds gradually sloped towards the channel visible in the middle of the lough at low water. The muds were black in colour and anoxic in smell when the core sediment samples were taken. Numerous individuals of the gastropod genus *Hydrobia* were present on the sediment surface and the ragworm *Hediste diversicolor* was observed when the samples were taken and in the dug over area. No talitridis were recorded from the upper shore. The substrate was considered too soft to allow access by walking and the mid and lower shore stations were sampled from an inflatable boat. All sediment samples at the mid and lower shores were taken by means of a small Van Veen grab (0.025 m<sup>2</sup> sampling area) and a geo-referenced acoustic bathymetry plot substituted the shore levels taken using the surveyor's level and staff. Additionally, an

area of  $1\text{m}^2$  was grab sampled and observations of the infauna present in the sediment were made on the boat. No underwater photographs could be taken due to the poor visibility conditions dominant at the time of the survey.



**Figure 3.8.5.** Transect 4 profile. Site No. 8 Lough Swilly, Co. Donegal.



**Photo 3.8.14.** View of Transect 4 from the upper shore station. Lough Swilly, Co. Donegal.

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 4

#### Station 1. Upper Shore

Location: 54° 58.890'N, 07° 39.147'W

Distance from High Water: 0m

Main sediment type: mud

Fauna recorded:

Taxon name	Core	Dig	Observed
Tipulidae sp.	1	-	-
<i>Hediste diversicolor</i>	6	A	-
<i>Tubificoides benedii</i>	5	-	-
<i>Corophium volutator</i>	1	-	-
Palaemonidae sp.	1	-	-
<i>Leptochiton</i> sp.	1	-	-
<i>Littorina obtusata</i>	1	-	-
<i>Hydrobia</i> sp.	-	-	A

Number of taxa: 8

Flora recorded:

Taxon name	Observed
<i>Spartina anglica</i>	A

Number of taxa: 1

#### Station description

Deep anoxic mud (67.01% silt). *Spartina anglica* was present in clumps on the upper shore and the gastropod *Hydrobia* was abundant on the sediment surface. The fauna recorded from the core sediment samples was represented by 8 different taxa dominated by *Hediste diversicolor* and *Tubificoides benedii*.

#### Biotope

Similar to 'LS.Lmu.Uest.Hed.Ol. *Hediste diversicolor* and oligochaetes in littoral mud' as listed in the JNCC Marine Classification system (Connor *et al.*, 200





**Photo 3.8.15.** Transect 4. Station 1. Upper shore. Site No. 8 Lough Swilly, Co. Donegal.

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 4

#### Station 2. Mid shore

Location: 54° 58.85' N, 07° 38.78' W

Distance from High Water: 250m

Depth: 0.7m

Main sediment type: mud

Fauna recorded:

Taxon name	Core	Dig	Observed
Tipulidae indet.	1	-	-
<i>Eteone longa</i>	3	-	-
<i>Hediste diversicolor</i>	9	A	-
<i>Nephtys</i> sp.	-	A	-
<i>Nephtys hombergii</i>	46	-	-
<i>Pygospio elegans</i>	4	-	-
<i>Ampharete</i> sp.	1	-	-
<i>Tubificoides</i> spp.	25	-	-
<i>Tubificoides benedii</i>	365	-	-
<i>Gammarus locusta</i>	11	-	-
<i>Corophium arenarium</i>	4	-	-
<i>Hydrobia neglecta</i>	3	-	-
<i>Cylichna cylindracea</i>	1	-	-
<i>Parvicardium ovale</i>	23	-	-
<i>Macoma balthica</i>	43	A	-
<i>Abra prismatica</i>	1	-	-
<i>Scrobicularia plana</i>	31	A	-

Number of taxa: 17

#### Station description

The sediment retrieved from the grab consisted of black anoxic mud. Granulometric analysis of the sample returned 62.4% of silt and 24.23% of fine sand as the main fractions. Due to the distance from the top of the shore and the fact that the station was inaccessible by foot, no visual observations of signs of faunal activity (casts, siphon



holes, etc) present on the sediment surface were possible. A total 17 taxa were recorded from the grabs. The faunal community characterising the sediment is the typical of muddy estuarine areas with oligochates, *Hediste diversicolor*, *Nephtys* sp. and bivalves such as *Macoma balthica* and *Scrobicularia plana* dominating the assemblage. The total number of macroinvertebrate taxa identified from the core samples was 15 and the highest densities recorded belonged to *Tubificoides benedii*, *Macoma balthica*, *Nephtys hombergii* and *Scrobicularia plana* in that order.

#### Biotope

Similar to 'LS.Lmu.Mest.HedMacScr *Hediste diversicolor*, *Macoma balthica* and *Scrobicularia plana* in littoral sandy mud' as listed in the JNCC Marine Classification system (Connor *et al.*, 2004).

## Site No. 8 Lough Swilly, Co. Donegal

### Transect 4

#### Station 3. Lower shore

Location: 54° 58.80' N, 07° 38.62' W

Distance from High Water: 425m

Depth: 0.7m

Main sediment type: mud

Fauna recorded:

Taxon name	Core	Dig	Observed
<i>Hediste diversicolor</i>	4	A	-
<i>Nephtys hombergii</i>	34	A	-
<i>Pygospio elegans</i>	3	-	-
<i>Tubificoides benedii</i>	227	-	-
<i>Parvicardium minimum</i>	1	-	-
<i>Macoma balthica</i>	9	A	-
<i>Scrobicularia plana</i>	11	A	-

Number of taxa: 7

#### Station description

The sediment consisted of sandy anoxic mud (63.62% silt, 21.13% very fine sand). Due to the distance from the top of the shore and the fact that the station was unaccessible by foot, no visual observations of signs of faunal activity (casts, syphon holes, etc) present on the sediment surface were possible. The faunal community was dominated by superabundant *Tubificoides benedii* and abundant *Hediste diversicolor*, *Nephtys hombergii*, *Scrobicularia plana* and *Macoma balthica*. Total number of species recorded was 7.

#### Biotope

Similar to 'LS.LMu.UEst.Hed.Ol *Hediste diversicolor* and oligochaetes in littoral mud' as listed in the JNCC Marine Classification system (Connor *et al.*, 2004).

## 4. Discussion

The fauna recorded from the different substrate types e.g. mud, muddy sand and sand was typical for that sort of substratum for Irish coastal waters. However, due to the difficulty of sampling some substrate types e.g. soft mud, some species e.g. *Streblospio shrubsholii* are poorly recorded in Irish waters. Species numbers varied from zero at the upper and mid shore stations for the exposed shore off Ballyness, Co. Donegal to 36 taxa at Transect 5, low shore in the Clew Bay Complex, Co. Mayo. The second most diverse station was also recorded in Clew Bay (33 taxa from Sampling Area 1a, Station 2). The third richest station was the lower shore of Transect 3, Lough Swilly, Co. Donegal (29 taxa recorded).

Some of the faunal assemblages were not listed in the the most recent JNCC Marine Classification while others were found in the 1997 document. Many of the locations (i.e.: Ballyteige Burrow, Co. Wexford) had species such as the spionid polychaete, *Pygospio elegans* as the dominant taxon. This species is not listed in the JNCC classification

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**APPENDIX I**  
**LIST OF SITES AND STATIONS SURVEYED**  
**CSAC SANDEFLATS AND MUDEFLATS SURVEY**  
**IRELAND, 2006**



**APPENDIX II**  
**FAUNAL ANALYSIS RESULTS**  
**SPECIES ABUNDANCE DATA**  
**CSAC SANDEFLATS AND**  
**MUDEFLATS SURVEY**  
**IRELAND, 2006**



Site No.1 Boyne Coast and Estuary	TRANSECT 1																				
	SL	STATION 1					STATION 2					STATION 3									
	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs	
<b>ANNELIDA</b>																					
<b>PHYLLODOCIDA</b>																					
<b>Sigalionidae</b>																					
<i>Sigalion mathildae</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
<b>Phyllodocidae</b>																					
<i>Eteone longa</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Nereididae</b>																					
<i>Hediste diversicolor</i>	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	O	-	-	-
<b>Nephtyidae</b>																					
<i>Nephtys</i> sp.	-	-	-	-	-	-	-	-	-	-	F	-	-	-	-	-	-	F	-	-	-
<i>Nephtys caeca</i>	-	-	-	-	-	-	-	-	2	9	-	-	-	-	2	-	-	-	-	-	-
<i>Nephtys cirrosa</i>	-	-	-	-	-	-	-	4	-	-	3	-	-	2	2	-	1	-	-	-	-
<i>Nephtys hombergii</i>	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>ORBINIIDA</b>																					
<b>Orbiniidae</b>																					
<i>Orbinia latreillii</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
<i>Scoloplos armiger</i>	-	-	-	-	-	-	-	2	-	-	-	-	-	2	-	-	-	O	-	-	-
<b>SPIONIDA</b>																					
<b>Spionidae</b>																					
<i>Pygospio elegans</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>OLIGOCHAETA</b>																					
<b>TUBIFICIDA</b>																					
Tubificidae sp.	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
<i>Heterochaeta costata</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
<i>Tubificoides pseudogaster</i>	-	-	5	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tubificoides benedii</i>	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CRUSTACEA</b>																					
<b>AMPHIPODA</b>																					
<b>Talitridae</b>																					
<i>Talitrus saltator</i>	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Pontoporeiidae</b>																					
<i>Gammarus</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	-	-	-	-	-	-
<i>Gammarus duebeni</i>	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
<b>ISOPODA</b>																					
<b>Cirolanidae</b>																					
<i>Eurydice pulchra</i>	-	-	2	2	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Idotea linearis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
<b>DECAPODA</b>																					
<b>PORTUNOIDEA</b>																					
<b>Portunidae</b>																					
<i>Carcinus maenas</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	O	-	-
<b>INSECTA</b>																					
<b>TRICHOPTERA</b>																					
Trichoptera sp.	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>DIPTERA</b>																					
Diptera indet.	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Tipulidae</b>																					
<i>Tipula</i> sp.	-	-	1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>MOLLUSCA</b>																					
<b>RISSEOACEA</b>																					
<i>Hydrobia neglecta</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>NUCULOIDA</b>																					
<b>Nuculidae</b>																					
<i>Nucula nitidosa</i>	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>MYTILOIDA</b>																					
<b>Mytilidae</b>																					
<i>Modiolula phaseolina</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-





Site No.1 Boyne Coast and Estuary	TRANSECT 2																				
	SL	STATION 1					STATION 2					STATION 3									
	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs	
<b>VENEROIDA</b>																					
<b>Cardiidae</b>																					
<i>Parvicardium minimum</i>	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
<b>Tellinidae</b>																					
<i>Angulus tenuis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Macoma balthica</i>	-	-	-	-	-	-	-	-	-	1	2	1	O	-	-	8	-	1	O	-	-
<i>Donax vittatus</i>																					
<b>Semelidae</b>																					
<i>Abra</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	O	-	-	-	-	-	-	-	-
<i>Abra alba</i>	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
<i>Abra tenuis</i>	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
<i>Scrobicularia plana</i>				1						4		1	C			11	3	6		C	
<b>ECHINODERMATA</b>																					
<b>Ophiuriidae</b>																					
<i>Ophiura albida</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CLOROPHYCOTA</b>																					
<b>Ulvaceae</b>																					
<i>Enteromorpha</i> sp.	-	-	-	-	-	-	-	-	A	-	-	-	-	-	O	-	-	-	-	-	A
<i>Ulva lactuca</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-	-	-	-	-	C
<b>ANGIOSPERMAE</b>																					
<i>Spartina anglica</i>	-	-	-	-	-	-	-	-	P	-	-	-	-	-	P	-	-	-	-	-	-



















Site No. 3 South Dublin Bay	TRANSECT 1																			
	SL	STATION 1					STATION 2					STATION 3								
	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs
<i>Pseudocuma longicornis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>DECAPODA</b>																				
<b>Crangonidae</b>																				
<i>Crangon crangon</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CIRRIPEDIA</b>																				
<b>Balanidae</b>																				
<i>Semibalanus balanoides</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>INSECTA</b>																				
<b>EPHEMEROPTERA</b>																				
<b>Baetidae</b>																				
Baetidae sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>MOLLUSCA</b>																				
<b>CEPHALASPIDEA</b>																				
<b>Cylichnidae</b>																				
<i>Cylichna cylindracea</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>VENEROIDA</b>																				
<b>Cardiidae</b>																				
<i>Cerastoderma edule</i>	-	-	-	-	-	-	-	-	-	-	-	-	C	C	-	-	-	-	C	C
<b>Montacutidae</b>																				
<i>Mysella bidentata</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Mactridae</b>																				
<i>Spisula subtruncata</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	A	-
<b>Tellinidae</b>																				
<i>Angulus tenuis</i>	-	-	-	-	-	4	F	-	3	4	-	4	C	-	4	-	-	4	C	-
<i>Donax vittatus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	A	-
<b>Veneridae</b>																				
<i>Chamelea gallina</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>MYTILICEA</b>																				
<b>Mytilidae</b>																				
<i>Mytilis edulis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>SOLENACEA</b>																				
<b>Solenidae</b>																				
<i>Ensis ensis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>ECHINODERMATA</b>																				
<b>OPHIURIDA</b>																				
<b>Ophiuridae</b>																				
<i>Ophiura albida</i>	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-
<b>CHROMOPHYCOTA</b>																				
<b>PHAEOPHYCEAE</b>																				
<b>CLOROPHYCOTA</b>																				
<b>Ulvaceae</b>																				
<i>Enteromorpha</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	O	-	-	-	-	-	O
<i>Ulva lactuca</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-













Site No.4: <i>Ballyteigue Burrow</i>	TRANSECT 2																			
	SL		STATION 1				STATION 2				STATION 3									
	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs
<b>Cirolanidae</b>																				
<i>Eurydice pulchra</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Idotea neglecta</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TANAIDACEA</b>																				
<b>Tanaidae</b>																				
<i>Tanaidae</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CUMACEA</b>																				
<b>Leuconiidae</b>																				
<i>Eudorella truncatula</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>DECAPODA</b>																				
Decapoda larvae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Portunidae</b>																				
<i>Liocarcinus</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Liocarcinus arcuatus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>INSECTA</b>																				
<b>DIPTERA</b>																				
<b>Tipulidae</b>																				
<i>Tipula</i> sp.	-	-	2	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
<b>MOLLUSCA</b>																				
<b>POLYPLACOPHORA</b>																				
<b>Leptochitonidae</b>																				
<i>Lepidochitona cinerea</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>MESOGASTROPODA</b>																				
<i>Lacuna</i> spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Lacuna vineta</i>	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
<b>VENEROIDA</b>																				
<b>Cardiidae</b>																				
<i>Parvicardium</i> spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Parvicardium scabrum</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Cerastoderma edule</i>	-	-	-	-	-	-	-	-	1	2	1	C	A	-	-	-	-	-	-	O
<b>Mactridae</b>																				
<i>Lutraria lutraria</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Tellinidae</b>																				
<i>Angulus tenuis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Macoma balthica</i>	-	-	-	-	-	-	-	-	1	8	-	C	-	-	-	-	-	-	-	-
<b>Semelidae</b>																				
<i>Abra</i> sp.	-	-	-	-	-	-	C	-	-	-	-	C	-	-	-	-	-	-	-	-
<i>Abra alba</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Abra nitida</i>	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-	-	-	-
<i>Abra tenuis</i>	-	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Scrobicularia plana</i>	-	-	-	-	-	-	-	-	2	5	C	-	-	-	-	-	-	-	-	-
<b>MYOIDA</b>																				
<b>Myidae</b>																				
<i>Mya arenaria</i>	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CLOROPHYCOTA</b>																				
<b>Ulvaceae</b>																				
<i>Enteromorpha</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	R
<i>Ulva lactuca</i>	-	-	-	-	-	-	-	-	-	-	-	-	R	-	-	-	-	-	-	-



Site No. 5 Great Island Channel	TRANSECT 2																			
	SL		STATION 1					STATION 2					STATION 3							
	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs
<b>NEMERTEA</b>																				
Nemertea sp.	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<b>ANNELIDA</b>																				
<b>PHYLLODOCIDA</b>																				
<b>Phyllococidae</b>																				
<i>Eteone longa</i>	-	-	-	4	-	-	-	-	2	5	2	-	-	-	-	1	1	1	-	-
<b>Nereididae</b>																				
<i>Hediste diversicolor</i>	-	-	4	2	-	2	A	-	10	89	22	9	S	-	2	5	3	17	A	-
<i>Neanthes irrorata</i>	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Nereis</i> sp.	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<b>Nephtyidae</b>																				
<i>Nephtys</i> sp.	-	-	-	-	-	-	A	-	-	-	-	-	A	-	-	-	-	-	A	-
<i>Nephtys hombergii</i>	-	-	2	3	3	4	-	-	1	-	2	4	-	-	3	2	1	1	-	-
<b>CAPITELLIDA</b>																				
<b>Capitellidae</b>																				
<i>Arenicola marina</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>ORBINIIDA</b>																				
<b>Orbiniidae</b>																				
<i>Scoloplos armiger</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>SPIONIDA</b>																				
<b>Spionidae</b>																				
<i>Polydora cornuta</i>	-	-	1	-	-	-	-	-	1	12	2	-	-	-	2	-	1	-	-	-
<i>Pygospio elegans</i>	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
<i>Streblospio shrubsolii</i>	-	-	2	5	12	12	-	-	1	4	1	3	-	-	-	4	6	-	-	-
<b>Cirratulidae</b>																				
<i>Aphelocheata marioni</i>	-	-	47	12	11	13	A	-	38	120	112	26	S	-	19	42	14	90	S	-
<i>Aphelocheata multibranchiis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tharyx killariensis</i>	-	-	-	4	4	-	-	-	-	-	5	-	-	-	7	-	-	-	-	-
<b>TEREBELLIDA</b>																				
<b>Ampharetidae</b>																				
<i>Ampharete</i> sp.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
<b>OLIGOCHAETA</b>																				
<i>Oligochaeta</i> sp.	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	18	-	-	-	-
<b>TUBIFICIDA</b>																				
<b>Tubificidae</b>																				
<i>Tubificoides</i> sp.	-	-	20	-	-	-	-	-	4	-	10	-	-	-	-	10	-	-	-	-
<i>Tubificoides benedii</i>	-	-	-	1	5	5	-	-	-	2	-	3	-	-	15	5	-	7	-	-
<b>CRUSTACEA</b>																				
<b>AMPHIPODA</b>																				
<b>Urothoidae</b>																				
<i>Urothoe elegans</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Corophiidae</b>																				
<i>Corophium arenarium</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>ISOPODA</b>																				
<i>Anthura gracillis</i>				4																
<b>TANAIDACEA</b>																				
<b>Tanaidae</b>																				
<i>Tanaida</i> sp.	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>DECAPODA</b>																				
<i>Crangon crangon</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>PORTUNOIDEA</b>																				
<b>Portunidae</b>																				
<i>Carcinus maenas</i>	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<b>MOLLUSCA</b>																				
<b>Cardiidae</b>																				
<i>Cerastoderma edule</i>	-	-	-	-	-	-	-	-	1	-	1	-	C	-	-	-	-	-	-	-
<b>Tellinidae</b>																				
<i>Angulus tenuis</i>	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<i>Macoma balthica</i>	-	-	-	1	-	-	F	-	-	-	-	-	-	-	3	-	-	-	F	-
<b>Semelidae</b>																				
<i>Scrobicularia plana</i>	-	-	-	-	-	-	-	-	-	2	-	-	C	-	-	1	-	-	F	-













Site No.6 Clew Bay Complex	Sampling area 1b														
	ST1			ST2			ST3			ST4			ST5		
	Core	Dig	Obs	Core	Dig	Obs	Core	Dig	Obs	Core	Dig	Obs	Core	Dig	Obs
<b>PORIFERA</b>															
<b>HALICHONDRIDA</b>															
<b>Halichondriidae</b>															
<i>Halichondria</i> spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Halichondria panicea</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CNIDARIA</b>															
<b>ANTHOZOA</b>															
<b>ACTINIARIA</b>															
<b>Actiniidae</b>															
<i>Actinia equina</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
<i>Anemonia</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>NEMATODA</b>															
Nematoda sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>NEMERTEA</b>															
Nemertea sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>HETERONEMERTEA</b>															
<i>Cerebratulus fuscus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>SIPUNCULA</b>															
Sipuncula sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>GOLFINGIIFORMES</b>															
<b>Golfingiidae</b>															
<i>Golfingia vulgaris</i>	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
<b>ANNELIDA</b>															
<b>POLYCHAETA</b>															
Polychaeta indet.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>PHYLLODOCIDA</b>															
<b>Polynoidae</b>															
<i>Harmothoe imbricata</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Pholoidae</b>															
<i>Pholoe synophthalmica</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Sigalionidae</b>															
<i>Sigalion mathildae</i>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
<b>Phyllodocidae</b>															
<i>Eteone longa</i>	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
<i>Mysta picta</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Anaitides mucosa</i>	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
<i>Eumida bahusiensis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Glyceridae</b>															
<i>Glycera</i> sp.	-	-	-	-	-	-	-	-	-	C	-	-	-	-	-
<i>Glycera tridactyla</i>	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
<b>Syllidae</b>															
<i>Ehlersia cornuta</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Exogone hebes</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Sphaerosyllis hystrix</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Nereidae</b>															
<i>Hediste diversicolor</i>	-	-	-	-	-	-	-	-	5	A	-	1	C	-	-
<i>Perinereis cultrifera</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Nephtyidae</b>															
<i>Nephtys</i> sp.	-	-	-	-	C	-	-	-	-	A	-	-	C	-	-
<i>Nephtys cirrosa</i>	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-
<i>Nephtys hombergii</i>	-	-	-	-	-	-	-	-	6	-	-	2	-	-	-
<b>EUNICIDA</b>															
<b>Eunicidae</b>															
<i>Marphysa bellii</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>ORBINIIDA</b>															
<b>Orbiniidae</b>															
<i>Orbinia latreillii</i>	-	-	-	4	-	-	-	-	-	-	-	3	C	-	-
<i>Scoloplos armiger</i>	-	-	-	2	-	-	-	-	3	-	-	-	-	-	-
<b>Paraonidae</b>															
<i>Aricidea minuta</i>	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
<b>SPIONIDA</b>															
<b>Spionidae</b>															
	-	-	-	-	-	-	-	-	-	A	-	-	-	-	-







































Site No.6 Clew Bay Complex	TRANSECT 5																			
	SL		STATION 1				STATION 2				STATION 3									
	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs
<b>Magelonidae</b>																				
<i>Magelona mirabilis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Chaetopteridae</b>																				
Chaetopteridae sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	P
<b>Cirratulidae</b>																				
Cirratulidae spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A
<i>Aphelochaeta marioni</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Cirratulus cirratus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CAPITELLIDA</b>																				
<b>Capitellidae</b>																				
<i>Capitella capitata</i>	-	-	1	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-
<i>Mediomastus fragilis</i>	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<i>Notomastus latericeus</i>	-	-	-	-	-	-	-	3	1	-	2	-	-	-	-	-	2	-	-	-
<b>Arenicolidae</b>																				
<i>Arenicola marina</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Maldanidae</b>																				
Maldanidae sp.	-	-	-	-	-	-	-	1	1	-	2	C	-	-	-	-	-	-	-	-
<i>Praxillura longissima</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
<i>Clymenura borealis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Euclymene oerstedii</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Praxillela praeterrissa</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>OPHELIIDA</b>																				
<b>Opheliidae</b>																				
<i>Travisia forbesii</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
<i>Polyophtthalmus pictus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>OWENIIDA</b>																				
<b>Oweniidae</b>																				
<i>Owenia fusiformis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	5	-	-	-	-
<b>TEREBELLIDA</b>																				
<b>Ampharetidae</b>																				
<i>Ampharete</i> sp.	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Ampharete lindstroemi</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Terebellidae</b>																				
<i>Lanice conchilega</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C
<b>SABELLIDA</b>																				
<b>Serpulidae</b>																				
<i>Pomatoceros lamarcki</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	P
<i>Pomatoceros triqueter</i>	-	-	-	-	-	-	-	6	-	-	1	-	-	-	-	-	-	-	-	-
<b>Spirorbidae</b>																				
Spirorbidae sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>OLIGOCHAETA</b>																				
Oligochaeta sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TUBIFICIDA</b>																				
<i>Tubificoides</i> sp	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tubificoides pseudogaster</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tubificoides benedii</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Enchytraeidae sp.	-	-	70	-	4	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-
<b>CRUSTACEA</b>																				
<i>Semibalanus balanoides</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>AMPHIPODA</b>																				
Amphipoda spp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Talitridae</b>																				
<i>Talitrus saltator</i>	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Urothoidae</b>																				
<i>Urothoe brevicornis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Urothoe elegans</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Phoxocephalidae</b>																				
<i>Metaphoxus pectinatus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Lysianassidae</b>																				
<i>Lysianassa ceratina</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
<b>Ampeliscidae</b>																				
<i>Ampelisca brevicornis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
<b>Pontoporeiidae</b>																				
<i>Bathyporeia guilliamsoniana</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-





Site No.7:

Ballyness Harbour

TRANSECT 1

	SL		STATION 1				STATION 2				STATION 3			
	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs
<b>ANNELIDA</b>														
<b>PHYLLODOCIDA</b>														
<b>Nereididae</b>														
<i>Hediste diversicolor</i>	-	-	2	1	2	1	A	-	-	-	-	-	-	-
<b>Nephtyidae</b>														
<i>Nephtys</i> sp.	-	-	-	-	-	-	C	-	-	-	-	-	-	F
<i>Nephtys cirrosa</i>	-	-	-	-	-	-	-	-	-	-	-	-	1	-
<i>Nephtys hombergii</i>	-	-	-	-	-	3	-	-	-	-	-	-	-	-
<b>ORBINIIDA</b>														
<b>Orbiniidae</b>														
<i>Scoloplos armiger</i>	-	-	-	-	-	1	-	-	1	1	-	1	C	-
<b>Paraonidae</b>														
<i>Aricidea catherinae</i>	-	-	-	-	-	1	-	-	-	-	-	-	-	-
<b>SPIONIDA</b>														
<b>Spionidae</b>														
<i>Spionidae</i> sp.	-	-	-	-	-	-	S	S	-	-	-	-	-	-
<i>Aonides oxycephala</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Malacoceros fuliginosus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Malacoceros vulgaris</i>	-	-	5	4	11	-	-	-	-	-	-	-	-	-
<i>Pygospio elegans</i>	-	-	33	24	87	-	-	5	2	-	-	-	1	1
<i>Scolelepis squamata</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Spio</i> sp.	-	-	-	-	4	-	-	-	-	1	-	-	-	-
<b>CAPITELLIDA</b>														
<i>Capitella capitata</i>	-	-	4	1	-	-	-	-	-	-	-	-	-	-
<i>Capitellides giardi</i>	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<i>Capitomastus minimus</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Arenicola marina</i>	-	-	-	-	-	-	-	-	-	-	-	C	-	-
<b>SABELLIDA</b>														
<b>Sabellidae</b>														
<i>Manayunkia aestuarina</i>	-	-	-	-	5	-	-	-	-	-	-	-	-	-
<b>OLIGOCHAETA</b>														
<b>Tubificidae sp.</b>														
<i>Tubificoides</i> spp.	-	-	-	-	53	-	-	8	-	-	-	-	-	-
<i>Tubificoides pseudogaster</i>	-	-	-	-	-	-	-	2	-	-	-	-	-	-
<i>Tubificoides benedii</i>	-	-	30	9	-	-	-	-	-	-	-	-	-	-
<i>Enchytraeidae</i> indet.	-	-	-	-	13	-	-	-	-	-	-	-	-	-
<b>CRUSTACEA</b>														
<b>THORACICA</b>														
<i>Dosima fascicularis</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>AMPHIPODA</b>														
<b>Oedicerotidae</b>														
<i>Synchelidium maculatum</i>	-	-	-	-	2	-	-	-	-	-	-	-	-	-
<b>Talitridae</b>														
<i>Talitrus saltator</i>	-	-	-	-	4	-	-	-	-	-	-	-	-	-
<b>Urothoidae</b>														
<i>Urothoe brevicornis</i>	-	-	-	-	-	-	-	-	-	-	-	1	2	8
<b>Pontoporeiidae</b>														
<i>Bathyporeia gracilis</i>	-	-	-	-	-	-	-	-	-	-	-	1	-	-
<i>Bathyporeia tenuipes</i>	-	-	-	-	-	-	-	-	-	-	-	1	-	-
<i>Chaetogammarus marinus</i>	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<b>Melphidippidae</b>														
<i>Megaluropus agilis</i>	-	-	-	-	1	-	-	-	-	-	-	-	-	-
<b>Corophiidae</b>														
<i>Corophium</i> sp.	-	-	-	-	-	-	C	-	-	-	-	-	-	-
<i>Corophium arenarium</i>	-	-	-	3	14	-	-	-	-	-	-	-	-	-
<b>Cirolanidae</b>														
<i>Eurydice pulchra</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Janiridae</b>														
<i>Jaera albifrons</i>	-	-	1	-	1	-	-	-	-	-	-	-	-	-
<b>DECAPODA</b>														
<b>Crangonidae</b>														
<i>Crangon crangon</i>	-	-	-	-	-	-	-	1	2	-	C	1	-	P

Site No.7:

Ballyness Harbour

TRANSECT 1

	SL		STATION 1				STATION 2				STATION 3			
	Dig	Obs	A	B	C	D	Dig	Obs	A	B	C	D	Dig	Obs
<b>PORTUNOIDEA</b>														
<b>Portunidae</b>														
<i>Carcinus maenas</i>	-	-	1	-	-	-	-	P	-	-	-	-	-	-
<b>MOLLUSCA</b>														
<b>VENEROIDA</b>														
<b>Cardiidae</b>														
<i>Parvicardium minimum</i>	-	-	-	-	1	1	-	-	-	-	-	-	-	-
<i>Cerastoderma edule</i>	-	-	-	-	-	-	-	1	-	-	-	-	A	-
<b>Tellinidae</b>														
<i>Angulus tenuis</i>	-	-	-	-	-	5	-	-	2	-	-	1	C	-
<i>Macoma balthica</i>	-	-	-	-	-	-	-	1	-	-	-	-	-	-
<b>ECHINODERMATA</b>														
<i>Echinocardium cordatum</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CHROMOPHYCOTA</b>														
<b>PHAEOPHYCEAE</b>														
<b>Fuaceae</b>														
<i>Ascophyllum nodosum</i>	-	-	-	-	-	-	-	C	-	-	-	-	-	-
<i>Fucus spiralis</i>	-	-	-	-	-	-	-	C	-	-	-	-	-	-
<b>CLOROPHYCOTA</b>														
<b>Ulvaceae</b>														
<i>Enteromorpha</i> sp.	-	-	-	-	-	-	-	O	-	-	-	-	O	-



Site No.7:

Ballyness Harbour

TRANSECT 2

SL STATION 1 STATION 2 STATION 3  
Dig Obs A B C D Dig Obs A B C D Dig Obs A B C D Dig Obs

ANNELIDA

PHYLLODOCIDA

Nereididae

*Hediste diversicolor*

- - - - - - - - - - - - - - - - - -

Nephtyidae

*Nephtys* sp.

- - - - - - - - - - - - - - - - - -

*Nephtys cirrosa*

- - - - - - - - - - - - - - - - - -

*Nephtys hombergii*

- - - - - - - - - - - - - - - - - -

ORBINIIDA

Orbiniidae

*Scoloplos armiger*

- - 1 1 - - O - - - - - - - - - - - -

Paraonidae

*Aricidea catherinae*

- - - - - - - - - - - - - - - - - -

SPIONIDA

Spionidae

*Spionidae* sp.

- - - - - - - - - - - - - - - - - -

*Aonides oxycephala*

- - - - - - - - - - - - - - - - - -

*Malacoceros fuliginosus*

- - - - - - - - - - - - - - - 1 - -

*Malacoceros vulgaris*

- - - - - - - - - 1 - - - - - - - -

*Pygospio elegans*

- - - - - - - - 2 - 4 - - - - 4 - 4 - -

*Scolecopsis squamata*

- - - - - - - - 1 - - - - - - - - - -

*Spio* sp.

- - - - - - - - - - - - - - - 2 - -

CAPITELLIDA

*Capitella capitata*

- - - - - - - - - - - - - - 1 6 - 6 - -

*Capitellides giardi*

- - - - - - - - - - - - - - - - - -

*Capitomastus minimus*

- - - - - - - - - 1 - - - - - - - - - -

*Arenicola marina*

- - - - - - - - - - - F - - - - - - - -

SABELLIDA

Sabellidae

*Manayunkia aestuarina*

- - - - - - - - - - - - - - - - - -

OLIGOCHAETA

Tubificidae sp.

- - - - - - - - - - - - - - - - - -

*Tubificoides* spp.

- - - - - - - - - - - - - - 1 - - - -

*Tubificoides pseudogaster*

- - - - - - - - - 2 - - - - - - - - - -

*Tubificoides benedii*

- - - - 1 - - - - - - - - - - - - - -

Enchytraeidae indet.

- - - - - - - - - - - - - - - - - -

CRUSTACEA

THORACICA

*Dosima fascicularis*

- - - - - - - - - - - - - - - - - -

AMPHIPODA

Oedicerotidae

*Synchelidium maculatum*

- - - - - - - - - - - - - - - - - -

Talitridae

*Talitrus saltator*

A A - - - - - - - - - - - - - - - - - -

Urothoidae

*Urothoe brevicornis*

- - - - - - - - - - - - - - - - - -

Pontoporeiidae

*Bathyporeia gracilis*

- - - - - - - - - - - - - - - - - -

*Bathyporeia tenuipes*

- - - - - - - - - - - - - - - - - -

*Chaetogammarus marinus*

- - - - - - - - - - - - - - - - - -

Melphidippidae

*Megaluropus agilis*

- - - - - - - - - - - - - - - - - -

Corophiidae

*Corophium* sp.

- - - - - - - - - - - - - - - - - -

*Corophium arenarium*

- - - - - - - - 1 - - - - - - - - - -

Cirolanidae

*Eurydice pulchra*

- - - - 1 - - - - - - - - - - - - - -

Janiridae

*Jaera albifrons*

- - - - - - - - - - - - - - - - - -

DECAPODA

Crangonidae

*Crangon crangon*

- - - - - - - - - - - - - - - - - -





Site No.7:

Ballyness Harbour

TRANSECT 3

|                               | SL          |     | STATION 1 |   |   |   |     | STATION 2 |   |   |   |   | STATION 3 |     |   |   |   |   |     |     |
|-------------------------------|-------------|-----|-----------|---|---|---|-----|-----------|---|---|---|---|-----------|-----|---|---|---|---|-----|-----|
|                               | Dig         | Obs | A         | B | C | D | DIG | Obs       | A | B | C | D | Dig       | Obs | A | B | C | D | Dig | Obs |
|                               | PORTUNOIDEA |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <b>Portunidae</b>             |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <i>Carcinus maenas</i>        |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| -                             |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <b>MOLLUSCA</b>               |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <b>VENEROIDA</b>              |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <b>Cardiidae</b>              |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <i>Parvicardium minimum</i>   |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| -                             |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <i>Cerastoderma edule</i>     |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| -                             |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <b>Tellinidae</b>             |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <i>Angulus tenuis</i>         |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| -                             |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <i>Macoma balthica</i>        |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| -                             |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <b>ECHINODERMATA</b>          |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <i>Echinocardium cordatum</i> |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| -                             |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <b>CHROMOPHYCOTA</b>          |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <b>PHAEOPHYCEAE</b>           |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <b>Fuaceae</b>                |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <i>Ascophyllum nodosum</i>    |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| -                             |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <i>Fucus spiralis</i>         |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| -                             |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <b>CLOROPHYCOTA</b>           |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <b>Ulvaceae</b>               |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| <i>Enteromorpha sp.</i>       |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |
| -                             |             |     |           |   |   |   |     |           |   |   |   |   |           |     |   |   |   |   |     |     |



























