
Robin Rigg Monitoring. Cable Route Benthic Macro Invertebrate Survey Data Report, November 2008

1. Introduction

In order to comply with Marine Environment Monitoring Programme (MEMP) and FEPA licence requirements for the construction of the Robin Rigg Offshore Windfarm a benthic survey along the cable route of the windfarm was undertaken on 6 November 2008

This survey was the first benthic survey of the cable route out of a biannual (twice per year) survey programme.

This technical note summarises the methodology and results of this survey. No data interpretation has been undertaken.

2. Method

A benthic survey for macro invertebrates of the Robin Rigg windfarm cable route was conducted using the fisheries patrol vessel *Solway Protector*. Eight sampling stations were sampled along the length of the cable route (**Figure 1**).

Samples were recovered using a 0.1m² Day grab. At each sampling station duplicate grab samples were collected. The time and location the grab was dropped was recorded using the vessel's Global Positioning System (GPS), while depth was measured using the vessel's sounder. Surface water salinity and temperature were measured using a portable probe¹ and water column clarity was measured using a Secchi disc. A visual assessment of sediment type was also made. Each sediment sample was sieved using a 1mm mesh and the material retained in the sieve was transferred to labelled sample bottles and preserved in 5% formaldehyde. A sediment sub-sample was taken for particle size analysis (PSA) and Total Organic Carbon (TOC) analysis.

Taxonomic identification of the macro-faunal species found in the samples was undertaken by Identichaete, while the PSA and TOC analysis on the sediment samples was undertaken by AES Laboratories². Although duplicate grab samples were taken at each sampling station, in accordance with the approved methodology invertebrate identification, PSA and TOC was only performed on the first sample taken, with the second sample being preserved for reference.

3. Results

The physical and environmental data from the survey are recorded in **Table 1.1**.

¹ WTW Multi 340i ph/Dissolved Oxygen/Conductivity probe

² United Kingdom Accreditation Service (UKAS) accredited laboratory

Table 1.1 – Sampling station locations and physical data

Sampling station	Date	Time (GMT)	Lat.	Long.	Depth (m)	Salinity (‰)	Water Temp (°C)	Secchi Depth (m)	Visual Sediment Type	Sea State (Beaufort Force)
Site 1	6/11/08	17.24	N54°44.8200'	W003°41.3500'	6.4	30.2	10.4	2.5	Fine Sand	3*
Site 2	6/11/08	17.31	N54°44.4800'	W003°40.7100'	11.9	31.1	10.6	3.0	Fine Sand	3*
Site 3	6/11/08	17.39	N54°44.1500'	W003°40.7100'	18.3	30.4	10.6	2.5	Fine Sand	
Site 4	6/11/08	17.45	N54°43.8300'	W003°39.9200'	7.9	30.2	11.1	3.0	Fine Sand	3*
Site 5	6/11/08	17.52	N54°43.5400'	W003°38.4500'	13.7	32.1	11.2	3.0	Fine Sand	3*
Site 6	6/11/08	17.59	N54°43.2200'	W003°37.7400'	9.1	30.7	10.9	3.0	Fine Sand	3*
Site 7	6/11/08	18.08	N54°42.5500'	W003°36.1800'	20.4	31.8	10.4	2.0	Muddy sand	3*
Site 8	6/11/08	18.15	N54°42.2100'	W003°35.3700'	14.9	32.2	10.2	2.0	Muddy sand	3*

NB * Beaufort force 3 describes a sea state with large wavelets with crests beginning to break and scattered whitecaps

Particle size distributions agree with the visual assessment that sediments in this area are largely comprised of fine sand (Table 1.2). The exceptions to this were sample three which contained a larger component of coarse to medium sands, and samples seven and eight which contained a larger component of very fine sands (i.e. the sediments from the two most inshore stations contained finer sediment).

Although no statistical analysis has been undertaken it can be seen that generally the invertebrate samples were more diverse (i.e. a larger number of species) and more productive (a larger number of individuals) the closer inshore they were taken (Table 1.3). Samples taken from sampling stations seven and eight contained a greater variety of species and larger total number of animals, with bivalves being more abundant. The invertebrates found in the other samples appear to be consistent with an impoverished sand community including fauna such as the amphipod *Bathyporeia* spp and the polychaete *Nephtys cirrosa*.

Table 1.2 – Particle Size Analysis (PSA) and Total Organic Carbon (TOC) of sediment

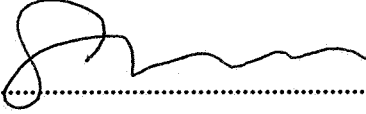
Sampling station	>4000 µm (%)	4000-2000 µm (%)	2000-1000 µm (%)	1000-500 µm (%)	500-250 µm (%)	250-125 µm (%)	125-63 µm (%)	<63 µm (%)	TOC (%)
Site 1	0	0	<0.1	<0.1	3.7	89.3	4.3	2.6	<0.1
Site 2	0	0	<0.1	<0.1	0.2	73.8	23.5	2.6	<0.1
Site 3	0	0.9	2.8	13.6	23.7	47.1	8.9	3.1	
Site 4	0	0	0	0.7	1.1	87.0	7.0	4.7	<0.1
Site 5	0	0.1	<0.1	0.1	31.2	48.8	15.4	4.4	<0.1
Site 6	0	0.1	0	0	11.4	82.5	3.7	2.3	<0.1
Site 7	0	0	0	0.1	0.3	44.4	33.7	21.8	<0.1
Site 8	0	0.1	0	0.2	0.2	40.0	32.5	26.9	<0.1

Table 1.3 – Macro-invertebrate counts from Robin Rigg cable route

Species	Sampling Station and Species Counts							
	1	2	3	4	5	6	7	8
<i>Nemertea</i> indet					1			
<i>Pholoe inornata</i>							2	
<i>Microphthallus similis</i>								1
<i>Periculodes longimanus</i>							1	2
<i>Glycera trydactyla</i>							3	
<i>Nephtys assimilis</i>							1	1
<i>Nephtys cirrosa</i>	2	5	6	1	3	5		
<i>Nephtys</i> (juvenile) indet.							1	1
<i>Nephtys hombergii</i>							2	1
<i>Spio martinensis</i>	1						1	
<i>Magelona johnstoni</i>						1	6	1
<i>Magelona filiformis</i>							2	
<i>Ophelia borealis</i>			7			1		
<i>Bathyporeia elegans</i>		5	6	1	1	6	1	2
<i>Bathyporeia nana</i>	2		2		1			
<i>Pullinices puchella</i>				1				
<i>Nucella nitidosa</i>							6	
<i>Mytilus edulis</i>							4	
<i>Fabulina fabula</i>		1		1			13	2
<i>Microphthalamus similis</i>			2					
<i>Spiopahanes bombyx</i>			1				1	2
<i>Scolelepis mesnili</i>			1				1	2
<i>Gastrosaccus spinifer</i>			4		1			
<i>Pseudocuma longicornis</i>		2						1
<i>Pontocrates altimarinus</i>	1							


NOTE: Indet = not possible to identify to higher taxonomic resolution

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