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Drigg Coast SAC, Ravenglass Estuary Intertidal Survey

Appendices

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Appendices

Marine Ecological Surveys Limited
24a Monmouth Place
BATH
BA1 2AY

Tel:01225 442211
Fax:01225 444411

email:*marine@seasurvey.co.uk*
www.seasurvey.co.uk

Appendix Table 1. Summary of sampling log and navigational positions for stations sampled during the October 2013 Drigg Coast SAC intertidal survey. Navigational positions are recorded in decimal degrees (WGS84).

Station	Latitude	Longitude	DateTaken	Time Taken (BST)	Sediment Description	Notes	Salinity (ppt)	Anoxic Layer Depth (cm)
1	-3.434	54.344	06/10/2013	08:10:00	Sand	No obvious fauna at station	28	-
2	-3.437	54.343	06/10/2013	07:57:00	Sand	No obvious fauna at station	33	-
3	-3.441	54.341	06/10/2013	07:45:00	Sand	*Arenicola* casts 10/m2, pools of standing water	34	-
4	-3.424	54.346	03/10/2013	18:00:00	Sand	No obvious fauna at station	-	-
5	-3.422	54.345	03/10/2013	17:45:00	Sand	Gravelly sections towards lower/mid shore	24	-
6	-3.420	54.344	03/10/2013	17:07:00	gravelly Sand	Small amount of *Enteromorpha*	26	-
7	-3.421	54.352	03/10/2013	16:25:00	gravelly Sand	Section of *Salicornia,* thin layer of silt	20	-
8	-3.418	54.353	03/10/2013	16:05:00	muddy Sand	Section of *Salicornia*	25	-
9	-3.416	54.353	03/10/2013	15:24:00	Sand	Moored boats, bird prints, *Arenicola* casts, Compacted sediment	19	-
10	-3.425	54.359	04/10/2013	14:20:00	Mud	*Corophium, Arenicola* casts, near saltmarsh	24	-
11	-3.423	54.358	04/10/2013	14:50:00	Mud	*Enteromoprha, Arenicola* casts, *Corophium, 35% Enteromorpha coverage*	26	-
12	-3.420	54.357	04/10/2013	15:15:00	muddy Sand	*Arenicola* casts 20/m2	30	-
13	-3.401	54.335	05/10/2013	16:30:00	Mud	Lots of waterbirds observed	25	-
14	-3.402	54.336	05/10/2013	17:03:00	Sand	Next to stream, Fine sand, Bird prints	26	-
15	-3.402	54.337	05/10/2013	17:25:00	Sand	Fine Sand, *Arenicola* casts	27	-
16	-3.409	54.360	07/10/2013	14:25:00	Mud	Situated on edge of saltmarsh, *Corophium*	29	-
17	-3.409	54.360	07/10/2013	08:40:00	Mud	*Salicornia,* Mud/Silt	30	-
18	-3.410	54.361	07/10/2013	07:40:00	sandy Mud	Few *Corophium* burrows, loose *Fucus* fronds	28	-
19	-3.406	54.347	07/10/2013	10:20:00	sandy Gravel	Mussel and cockle debris, Coarse sediment	26	-
20	-3.407	54.347	07/10/2013	10:05:00	gravelly Sand	Blue mussel debris, sand waves, near section of coarse sediment	31	-
21	-3.409	54.347	07/10/2013	09:50:00	Sand	*Enteromorpha, Fucus* fronds	-	-

Appendix Table 2. Table summarising the Particle Size Distribution (PSD) of each station sampled during the October 2013 Drigg Coast SAC intertidal survey. The sieve apertures are shown in millimetres. The data are expressed as absolute percentage retained.

Station	Sieve Aperture (mm)											
	63	31.5	16	8	4	2	1	0.5	0.25	0.125	0.0625	Pan
1	0.00	0.00	0.00	0.31	0.18	0.16	0.15	15.58	64.30	19.41	0.00	0.00
2	0.00	0.00	0.00	0.00	0.03	0.05	0.07	4.75	53.60	40.70	0.86	0.00
3	0.00	0.00	0.00	0.03	0.00	0.02	0.03	7.57	51.00	38.80	2.60	0.00
4	0.00	0.00	0.00	1.28	1.29	0.25	0.12	17.66	64.60	14.90	0.00	0.00
5	0.00	0.00	14.99	10.91	4.77	4.48	2.57	14.89	39.90	7.54	0.00	0.00
6	0.00	0.00	47.32	10.70	2.98	1.19	0.35	2.38	21.74	13.24	0.12	0.00
7	0.00	3.50	10.66	5.12	1.19	0.24	0.06	7.49	49.30	13.65	0.05	8.78
8	0.00	0.00	0.00	0.97	1.10	0.38	0.18	7.22	30.50	24.05	7.99	27.67
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	33.22	61.00	5.45	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	1.33	9.78	27.80	61.02
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.50	24.86	31.40	41.26
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.50	73.80	12.18	4.56
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.12	1.62	9.71	29.40	57.19
14	0.00	0.00	0.00	0.00	0.01	0.03	0.10	0.01	24.01	63.70	6.15	5.95
15	0.00	0.00	0.00	0.00	0.45	1.26	1.06	4.32	47.90	43.10	1.92	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98	1.82	1.89	11.30	83.94
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.91	1.71	10.99	28.40	56.97
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	22.16	42.80	34.65
19	0.00	7.45	11.86	12.79	5.14	3.86	3.69	10.21	20.51	18.38	3.53	2.58
20	0.00	0.00	16.35	10.53	6.50	2.45	1.26	2.37	29.90	27.36	1.24	2.01
21	0.00	0.00	14.27	22.03	9.47	5.47	1.89	1.57	20.17	20.64	2.06	2.45

Appendix Table 3. Table summarising the percentage gravel (≥2mm), sand (1mm-0.063mm) and silt (<0.063mm) at each station sampled during the October 2013 Drigg Coast SAC intertidal survey. A Folk classification has additionally been assigned to each station.

Station	% Gravel	% Sand	% Silt	Folk Description
1	0.65	99.44	0.00	**S**
2	0.08	99.98	0.00	**S**
3	0.05	100.00	0.00	**S**
4	2.82	97.28	0.00	**(g)S**
5	35.15	64.90	0.00	**sG**
6	62.19	37.83	0.00	**sG**
7	20.71	70.55	8.78	**gmS**
8	2.45	69.94	27.67	**(g)mS**
9	0.00	100.01	0.00	**S**
10	0.00	38.92	61.02	**sM**
11	0.00	58.76	41.26	**mS**
12	0.00	95.48	4.56	**S**
13	0.00	42.85	57.19	**sM**
14	0.04	93.97	5.95	**S**
15	1.71	98.30	0.00	**(g)S**
16	0.00	15.99	83.94	**sM**
17	0.00	43.01	56.97	**sM**
18	0.00	65.41	34.65	**mS**
19	41.10	56.32	2.58	**sG**
20	35.83	62.13	2.01	**sG**
21	51.24	46.33	2.45	**sG**

Appendix Table 4. Table summarising the abundance of macrofauna at each station during the October 2013 Drigg Coast SAC intertidal survey. Abundance data is from the hand core samples as described in the methods section of the report.

TaxonName	1 A	1 B	1 C	1 D	1 E	2 A	2 B	2 C	2 D	2 E	3 A	3 B	3 C	3 D	3 E	4 A	4 B	4 C	4 D	4 E	5 A	5 B	5 C	5 D	5 E	6 A	6 B	6 C
ACTINIARIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEMERTEA	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	1	-	-	-	-
NEMATODA	1	-	2	1	-	1	1	-	-	-	1	-	1	2	-	3	2	-	1	-	-	3	-	1	-	-	-	-
POLYCHAETA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eteone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eteone longa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anaitides mucosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Glycera tridactyla	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microphthalmus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nereididae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nereididae	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hediste diversicolor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nephtys	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nephtys cirrosa	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	1	-	1	-	2	-	-
Nephtys hombergii	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scoloplos armiger	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aricidea minuta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paraonis fulgens	-	-	-	-	-	-	1	-	-	-	-	1	1	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Spionidae	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malacoceros tetracerus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pygospio elegans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scolelepis squamata	-	-	-	1	-	1	-	-	-	-	-	-	2	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Psammodrilus balanoglossoides	3	2	10	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capitella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arenicola marina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophelia	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	-	1	-	-	-	-
Ophelia rathkei	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
PROTODRILIDA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Protodriloides chaetifer	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	1	-	-	3	-	1	-	-	-	-
Manayunkia aestuarina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OLIGOCHAETA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterochaeta costata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tubificoides benedii	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Tubificoides insularis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tubificoides pseudogaster	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Enchytraeidae	-	1	-	-	1	1	1	-	1	1	-	-	1	-	-	1	-	-	-	-	-	3	-	-	1	1	-	1
CIRRIPEDIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BALANOMORPHA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Elminius modestus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Semibalanus balanoides	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COPEPODA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pontocrates arenarius	-	-	-	-	-	-	-	-	-	1	1	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Urothoe brevicornis	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia elegans	-	-	-	-	-	-	-	-	-	-	-	1	1	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia pelagica	-	-	-	-	-	6	10	5	7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Bathyporeia pilosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	8	2	-	-	-	-	-	-	-	-
Bathyporeia sarsi	-	-	-	-	-	1	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Haustorius arenarius	-	-	-	-	-	2	-	1	2	3	1	-	-	1	4	-	-	-	1	1	-	-	-	-	-	-	-	-

TaxonName	1 A	1 B	1 C	1 D	1 E	2 A	2 B	2 C	2 D	2 E	3 A	3 B	3 C	3 D	3 E	4 A	4 B	4 C	4 D	4 E	5 A	5 B	5 C	5 D	5 E	6 A	6 B	6 C
Melita palmata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corophium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corophium	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Corophium arenarium	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corophium volutator	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gnathiidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurydice affinis	2	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Eurydice pulchra	-	1	1	-	-	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jaera albifrons	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jaera "albifrons group"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carcinus maenas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
COLLEMBOLA	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrophilidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bledius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bledius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterocerus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GASTROPODA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Littorina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Littorina littorea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rissoa parva	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrobia ulvae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Retusa obtusa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limapontia depressa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mytilidae	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	1	-	1	1	2
Mytilus edulis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Montacutidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kurtiella bidentata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerastoderma edule	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerastoderma edule	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spisula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Angulus tenuis	-	-	-	-	-	-	-	-	-	-	1	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Macoma balthica	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scrobicularia plana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scrobicularia plana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TaxonName	6 D	6 E	7 A	7 B	7 C	7 D	7 E	8 A	8 B	8 C	8 D	8 E	9 A	9 B	9 C	9 D	9 E	10 A	10 B	10 C	10 D	10 E	11 A	11 B	11 C	11 D	11 E
ACTINIARIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEMERTEA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEMATODA	1	-	-	-	2	2	-	-	-	2	-	2	-	-	-	-	-	-	69	56	2	8	251	249	417	369	249
POLYCHAETA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eteone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eteone longa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	5	7	4	4	11
Anaitides mucosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Glycera tridactyla	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Microphthalmus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nereididae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Nereididae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	2	-
Hediste diversicolor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	5	14	7	5	-	1	-	-	-
Nephtys	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nephtys cirrosa	3	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Nephtys hombergii	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scoloplos armiger	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aricidea minuta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paraonis fulgens	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spionidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malacoceros tetracerus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pygospio elegans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	5	7	23	6
Scolelepis squamata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psammodrilus balanoglossoides	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Capitella	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Arenicola marina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Ophelia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophelia rathkei	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PROTODRILIDA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protodriloides chaetifer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manayunkia aestuarina	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	13	5	-	2	44	127	193	179	55
OLIGOCHAETA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterochaeta costata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5	-	-	118	35	109	37	96
Tubificoides benedii	-	-	-	-	-	-	-	-	-	-	2	-	-	1	1	-	-	1	19	20	1	6	3	8	3	2	1
Tubificoides insularis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tubificoides pseudogaster	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Enchytraeidae	-	-	194	145	173	193	98	-	2	1	1	4	-	1	-	4	-	-	8	5	-	-	176	97	136	125	119
CIRRIPEDIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BALANOMORPHA	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Elminius modestus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Semibalanus balanoides	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COPEPODA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	8	-	1
Pontocrates arenarius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urothoe brevicornis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia elegans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia pelagica	-	-	-	-	-	-	-	-	-	-	1	-	1	1	1	1	3	-	-	-	-	-	-	-	-	-	-
Bathyporeia pilosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia sarsi	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	2	4	-	-	-	-	-	-	-	1	-	-
Haustorius arenarius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TaxonName	6 D	6 E	7 A	7 B	7 C	7 D	7 E	8 A	8 B	8 C	8 D	8 E	9 A	9 B	9 C	9 D	9 E	10 A	10 B	10 C	10 D	10 E	11 A	11 B	11 C	11 D	11 E
Melita palmata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corophium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corophium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corophium arenarium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corophium volutator	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	32	100	35	42	53	3	238	116	237	162
Gnathiidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurydice affinis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurydice pulchra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jaera albifrons	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jaera "albifrons group"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carcinus maenas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
COLLEMBOLA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrophilidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Bledius	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bledius	-	1	2	-	1	-	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterocerus	-	-	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GASTROPODA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Littorina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Littorina littorea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rissoa parva	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Hydrobia ulvae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	1	11	3	10	2	3
Retusa obtusa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limapontia depressa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	4	3	-	4
Mytilidae	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-
Mytilus edulis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Montacutidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	3	11	2
Kurtiella bidentata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerastoderma edule	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerastoderma edule	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spisula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Angulus tenuis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Macoma balthica	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scrobicularia plana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scrobicularia plana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	1

TaxonName	12 A	12 B	12 C	12 D	12 E	13 A	13 B	13 C	13 D	13 E	14 A	14 B	14 C	14 D	14 E	15 A	15 B	15 C	15 D	15 E	16 A	16 B	16 C	16 D	16 E	17 A	17 B
ACTINIARIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEMERTEA	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEMATODA	13	13	25	36	27	7	14	5	5	6	-	1	8	1	8	-	-	1	-	1	23	40	6	10	19	81	111
POLYCHAETA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Eteone	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eteone longa	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	1
Anaitides mucosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Glycera tridactyla	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microphthalmus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nereididae	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nereididae	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	1	1	1
Hediste diversicolor	-	-	1	-	-	8	12	8	10	13	-	-	-	-	-	-	-	-	-	-	3	6	4	12	5	2	2
Nephtys	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nephtys cirrosa	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nephtys hombergii	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scoloplos armiger	3	5	2	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aricidea minuta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paraonis fulgens	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spionidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malacoceros tetracerus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pygospio elegans	1	2	6	1	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	1	-	-	6	9
Scolelepis squamata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psammodrilus balanoglossoides	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capitella	1	-	1	2	1	-	-	-	-	-	-	-	-	-	-	1	-	3	6	-	-	-	-	-	-	-	-
Arenicola marina	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	3	1	-	-	-	-	-	-	-	-
Ophelia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophelia rathkei	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PROTODRILIDA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protodriloides chaetifer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manayunkia aestuarina	-	1	10	4	1	1	3	14	1	2	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	4	1
OLIGOCHAETA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterochaeta costata	-	-	1	-	-	-	-	-	-	-	-	1	2	3	-	-	-	-	-	-	4	7	1	3	1	11	8
Tubificoides benedii	1	1	1	1	2	6	8	4	3	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tubificoides insularis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tubificoides pseudogaster	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Enchytraeidae	-	4	2	6	5	4	5	2	6	-	19	48	33	61	61	1	-	-	-	-	8	27	4	3	13	45	61
CIRRIPEDIA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BALANOMORPHA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Elminius modestus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Semibalanus balanoides	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COPEPODA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pontocrates arenarius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urothoe brevicornis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia elegans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia pelagica	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia pilosa	-	-	-	-	1	-	-	-	-	-	17	10	24	44	8	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia sarsi	-	-	1	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Haustorius arenarius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TaxonName	12 A	12 B	12 C	12 D	12 E	13 A	13 B	13 C	13 D	13 E	14 A	14 B	14 C	14 D	14 E	15 A	15 B	15 C	15 D	15 E	16 A	16 B	16 C	16 D	16 E	17 A	17 B
Melita palmata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corophium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corophium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Corophium arenarium	27	20	8	2	25	-	-	-	-	-	73	59	84	63	91	-	-	-	-	-	-	-	-	-	-	-	-
Corophium volutator	-	2	-	-	-	151	128	233	126	134	-	-	-	-	-	-	2	-	-	1	83	148	75	83	50	137	176
Gnathiidae	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurydice affinis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurydice pulchra	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Jaera albifrons	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jaera "albifrons group"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carcinus maenas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-
COLLEMBOLA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Hydrophilidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bledius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bledius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Heterocerus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GASTROPODA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Littorina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Littorina littorea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rissoa parva	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrobia ulvae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	2	1	1	-
Retusa obtusa	3	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limapontia depressa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Mytilidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mytilus edulis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Montacutidae	2	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kurtiella bidentata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerastoderma edule	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerastoderma edule	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spisula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Angulus tenuis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Macoma balthica	3	2	5	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scrobicularia plana	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scrobicularia plana	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TaxonName	17 C	17 D	17 E	18 A	18 B	18 C	18 D	18 E	19 A	19 B	19 C	19 D	19 E	20 A	20 B	20 C	20 D	20 E	21 A	21 B	21 C	21 D	21 E
ACTINIARIA	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
NEMERTEA	-	-	-	-	-	-	-	-	5	8	1	-	-	-	-	1	1	2	-	-	-	-	-
NEMATODA	110	91	103	183	152	78	74	107	198	145	155	146	163	34	2	9	-	3	-	-	-	1	3
POLYCHAETA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eteone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Eteone longa	-	4	2	4	5	2	1	5	3	2	2	2	3	-	1	-	1	-	-	-	-	-	-
Anaitides mucosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	5	1	-	-	-	-	-
Glycera tridactyla	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Microphthalmus	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-
Nereididae	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nereididae	1	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hediste diversicolor	-	3	1	2	1	4	3	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Nephtys	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nephtys cirrosa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Nephtys hombergii	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Scoloplos armiger	-	-	-	-	-	-	-	-	-	-	1	-	-	4	5	13	7	8	-	-	-	-	-
Aricidea minuta	-	-	-	-	-	-	-	-	5	1	9	2	-	27	5	2	8	5	-	-	-	-	-
Paraonis fulgens	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spionidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Malacoceros tetracerus	-	-	-	-	-	-	-	-	4	3	5	1	2	-	-	-	-	-	-	-	-	-	-
Pygospio elegans	13	3	15	1	-	-	-	1	-	-	-	-	-	-	2	-	2	1	-	-	-	-	-
Scolelepis squamata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Psammodrilus balanoglossoides	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Capitella	-	-	-	-	-	-	-	-	3	4	2	4	6	-	-	-	-	-	-	-	-	-	-
Arenicola marina	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophelia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ophelia rathkei	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PROTODRILIDA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protodriloides chaetifer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manayunkia aestuarina	6	2	4	56	16	1	1	14	8	-	6	5	5	-	-	-	-	-	-	-	-	-	-
OLIGOCHAETA	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	5	-	-	-	-	-	-
Heterochaeta costata	19	10	14	1	-	1	-	-	66	125	17	45	11	-	-	-	-	-	-	-	-	-	-
Tubificoides benedii	-	1	-	43	17	20	21	16	38	86	29	19	32	5	-	7	7	19	-	-	1	-	-
Tubificoides insularis	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	1	-	9	-	-	-	-	-
Tubificoides pseudogaster	-	-	-	-	-	-	-	-	18	90	25	15	32	24	6	17	6	-	-	-	-	-	-
Enchytraeidae	98	39	51	115	46	21	41	30	85	96	31	46	97	-	2	-	-	-	2	-	7	4	3
CIRRIPEDIA	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-
BALANOMORPHA	-	-	-	-	-	-	-	-	116	97	148	115	26	-	1	77	91	10	-	-	-	-	-
Elminius modestus	-	-	-	-	-	-	-	-	15	11	3	4	3	-	1	18	18	-	-	-	-	-	-
Semibalanus balanoides	-	-	-	-	-	-	-	-	2	-	1	-	-	-	-	1	5	-	-	-	-	-	-
COPEPODA	-	-	-	2	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Pontocrates arenarius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Urothoe brevicornis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia elegans	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia pelagica	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bathyporeia pilosa	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	18	36	10	19	21
Bathyporeia sarsi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	6	3	-	-	-	-	-
Haustorius arenarius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2

TaxonName	17 C	17 D	17 E	18 A	18 B	18 C	18 D	18 E	19 A	19 B	19 C	19 D	19 E	20 A	20 B	20 C	20 D	20 E	21 A	21 B	21 C	21 D	21 E
Melita palmata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Corophium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-
Corophium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Corophium arenarium	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Corophium volutator	119	142	118	114	95	44	69	120	25	19	23	28	26	-	-	-	-	-	-	-	-	-	-
Gnathiidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurydice affinis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurydice pulchra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	3
Jaera albifrons	-	-	-	-	-	-	-	-	2	2	3	-	1	-	-	-	1	-	-	-	-	-	-
Jaera "albifrons group"	-	-	-	-	-	-	-	-	4	2	-	1	-	-	-	-	-	-	-	-	-	-	-
Carcinus maenas	-	-	-	-	-	-	1	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-
COLLEMBOLA	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrophilidae	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bledius	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	1	-
Bledius	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Heterocerus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GASTROPODA	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Littorina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-
Littorina littorea	-	-	-	-	-	-	-	-	3	4	2	-	-	-	-	-	8	-	-	-	-	-	-
Rissoa parva	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrobia ulvae	-	-	2	-	-	-	1	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Retusa obtusa	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Limapontia depressa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mytilidae	-	-	-	-	-	-	-	-	-	-	1	1	1	-	-	5	8	2	-	-	-	-	1
Mytilus edulis	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	1	1	-	-	-	-	-	-
Montacutidae	-	-	-	1	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Kurtiella bidentata	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerastoderma edule	-	-	-	-	-	-	-	-	2	3	1	2	2	-	-	-	2	-	-	-	-	-	-
Cerastoderma edule	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spisula	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Angulus tenuis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Macoma balthica	-	-	-	-	-	1	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-
Scrobicularia plana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scrobicularia plana	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix Table 5. Table summarising the abundance, diversity and biomass of macrofauna at each station sampled during the October 2013 Drigg Coast SAC intertidal survey. All values are per 0.01m^2 hand core. (Biomass mgAFDW).

Sample	Abundance (N)	Diversity (S)	Biomass
1 A	6	3	0.16
1 B	4	3	0.05
1 C	17	7	0.24
1 D	6	6	5.21
1 E	2	2	0.03
2 A	13	7	11.14
2 B	16	6	1.90
2 C	9	5	0.74
2 D	15	7	3.27
2 E	8	5	2.31
3 A	6	6	5.93
3 B	4	4	21.43
3 C	8	7	0.37
3 D	13	5	1.50
3 E	17	9	25.05
4 A	7	5	0.69
4 B	2	1	0.02
4 C	0	0	0.00
4 D	11	4	11.46
4 E	4	3	9.63
5 A	4	3	0.08
5 B	17	9	60.80
5 C	0	0	0.00
5 D	7	7	33.86
5 E	1	1	0.02
6 A	4	3	1.53
6 B	1	1	0.02
6 C	4	3	0.25
6 D	10	5	11.54
6 E	4	2	7.49
7 A	196	2	3.47
7 B	145	1	2.36
7 C	177	4	4.81
7 D	195	2	3.72
7 E	103	4	3.36
8 A	0	0	0.00
8 B	3	2	0.67
8 C	3	2	0.03
8 D	5	4	0.36
8 E	6	2	0.05
9 A	3	3	0.51
9 B	7	5	1.30
9 C	4	4	4.74
9 D	7	3	0.53
9 E	7	2	2.16

Sample	Abundance (N)	Diversity (S)	Biomass
10 A	41	3	26.22
10 B	219	7	40.16
10 C	145	11	16.92
10 D	53	5	26.10
10 E	80	11	31.67
11 A	624	13	96.02
11 B	780	14	98.66
11 C	1010	13	63.60
11 D	993	13	165.52
11 E	711	14	88.17
12 A	56	11	30.23
12 B	53	12	62.27
12 C	64	13	36.79
12 D	61	11	13.40
12 E	75	16	22.64
13 A	178	7	76.03
13 B	171	7	62.18
13 C	267	7	139.24
13 D	151	6	62.29
13 E	163	7	337.38
14 A	109	3	13.15
14 B	119	5	9.85
14 C	153	7	17.29
14 D	175	8	22.36
14 E	168	4	22.78
15 A	4	3	35.68
15 B	3	2	10.84
15 C	7	3	106.05
15 D	8	3	63.01
15 E	2	2	0.20
16 A	122	6	12.62
16 B	235	10	38.43
16 C	93	8	20.24
16 D	114	7	59.80
16 E	90	7	16.57
17 A	291	11	35.50
17 B	370	9	43.89
17 C	367	8	25.26
17 D	295	9	47.77
17 E	311	10	34.34
18 A	526	12	49.38
18 B	332	7	32.39
18 C	172	9	46.10
18 D	212	9	52.27
18 E	296	10	49.32

Sample	Abundance (N)	Diversity (S)	Biomass
19 A	609	26	2423.86
19 B	703	22	2667.22
19 C	466	21	978.43
19 D	439	19	1570.03
19 E	417	21	2417.08
20 A	120	10	19.58
20 B	31	13	12.24
20 C	159	16	2000.64
20 D	185	20	3106.57
20 E	65	13	58.74
21 A	23	4	3.65
21 B	38	3	3.92
21 C	19	4	1.74
21 D	26	5	2.27
21 E	34	7	70.19

Appendix Table 6. Tables summarising the key species that contributed to the similarity within the faunal groups identified through multivariate analysis on Bray-Curtis similarity faunal abundance data averaged per station, collected during the October 2013 Drigg Coast intertidal survey.

Group A

Average similarity: 43.78

Species	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Balanomorpha (Juvenile)	8	9.32	#######	21.3	21.3
Tubificoides pseudogaster (a	4.63	5.07	#######	11.59	32.88
Nematoda	7.9	4.83	#######	11.03	43.91
Tubificoides benedii	4.57	4.3	#######	9.81	53.72
Elminius modestus	2.7	4.18	#######	9.55	63.27
Aricidea minuta	2.45	2.87	#######	6.56	69.84
Littorina littorea	1.3	1.97	#######	4.5	74.34
Nemertea	1.28	1.39	#######	3.18	77.52
Semibalanus balanoides	0.94	1.21	#######	2.76	80.28
Mytilidae (juvenile)	1.25	1.21	#######	2.76	83.04
Eteone longa (aggregate)	1.09	0.99	#######	2.25	85.29
Enchytraeidae	4.53	0.99	#######	2.25	87.54
Mytilus edulis	0.63	0.99	#######	2.25	89.79
Cerastoderma edule	1.06	0.99	#######	2.25	92.04

Group B

Average similarity: 68.68

Species	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Nematoda	12.79	18.65	5.56	27.15	27.15
Corophium volutator	11.15	18.41	5.78	26.81	53.96
Enchytraeidae	8.74	13.26	5.36	19.31	73.27
Manayunkia aestuarina	5.66	4.61	2.45	6.71	79.97
Heterochaeta costata	4.35	2.71	1.04	3.95	83.93
Eteone longa (aggregate)	1.89	2.71	5.83	3.95	87.87
Pygospio elegans	2.28	2.45	1.14	3.57	91.44

Group C

Average similarity: 72.06

Species	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Corophium volutator	9.68	30.02	5.76	41.66	41.66
Nematoda	4.11	12.4	3.34	17.21	58.87
Hediste diversicolor	2.81	9.66	16.62	13.4	72.27
Enchytraeidae	2.26	6.38	10.23	8.85	81.12
Tubificoides benedii	1.8	2.86	0.58	3.97	85.09
Manayunkia aestuarina	1.35	2.46	0.58	3.42	88.51
Nereididae	0.62	1.92	4.75	2.66	91.17

Group D

Average similarity: 22.46

Species	Av.Abund	Av.Sim	Sim/SD	Contrib%	Cum.%
Enchytraeidae	2.32	8.17	1.8	36.37	36.37
Nematoda	0.84	6.94	1.59	30.9	67.26
Tubificoides benedii	0.22	0.93	0.39	4.16	71.42
Bathyporeia pilosa	0.88	0.79	0.2	3.52	74.94
Bathyporeia pelagica	0.38	0.78	0.3	3.47	78.41
Haustorius arenarius	0.3	0.67	0.31	3	81.41
Nephtys cirrosa	0.25	0.65	0.31	2.91	84.32
Mytilidae (juvenile)	0.24	0.59	0.29	2.62	86.94
Bledius	0.25	0.51	0.3	2.27	89.21
Eurydice pulchra	0.24	0.43	0.28	1.91	91.12

Appendix Table 7. Results of the RELATE and BIO-ENV analyses performed to identify the relationships between sediment and infauna and to find the combination of sediment parameters that correlated most highly with the patterns observed in the infaunal communities sampled at the sampling stations across the Drigg Coast SAC in October 2013.

RELATE

Parameters

Rank correlation method: Spearman

Sample statistic (Rho): 0.332

Significance level of sample statistic: 0.11 %

Number of permutations: 9999

Number of permuted statistics greater than or equal to Rho: 10

BIO-ENV

Variables

1. 63
2. 31.5
3. 16
4. 8
5. 4
6. 2
7. 1
8. 0.5
9. 0.25
10. 0.125
11. 0.0625
12. Pan

Best results

No.Vars	Corr.	Selections
2	0.545	2,3,5,9
3	0.545	1-3,5,9
3	0.545	2,3,5,7,9
4	0.543	2,3,6,9
4	0.543	1-3,6,9
5	0.543	2,3,5,6,9
5	0.543	3,5,9
3	0.543	1,3,5,9
4	0.543	3,6,9
5	0.543	1,3,6,9

Appendix Table 8. Digital image log for photographs that were collected during the survey of intertidal sediments within the Drigg Coast SAC, conducted in October 2013. Navigational positions are recorded in WGS84.

Frame No.	Taken By	Subject	Location	Longitude (WGS84)	Latitude (WGS84)
1	RG & AL	Patch of *Zostera noltii* found on the foreshore near Saltcoats	River Irt	-3.423	54.358
2	RG & AL	Close up of Zostera nolti	River Irt	-3.423	54.358
3	RG & AL	View West across foreshore to Saltcoats from station 11	River Irt	-3.422	54.358
4	RG & AL	View South from station 11	River Irt	-3.422	54.358
5	RG & AL	View South from station 12, noting *Arenicola* casts	River Irt	-3.420	54.357
6	RG & AL	View North from station 12 across A2.23	River Irt	-3.420	54.357
7	RG & AL	*Arenicola* casts on the foreshore	River Irt	-3.418	54.356
8	RG & AL	View North East across A2.23	River Irt	-3.416	54.356
9	RG & AL	View South across high shore section of A2.32	River Irt	-3.427	54.358
10	RG & AL	View West across saltmarsh and high shore section of A2.32	River Irt	-3.427	54.358
11	RG & AL	Section of A2.12	River Irt	-3.428	54.356
12	RG & AL	View West across section of A2.12	River Irt	-3.428	54.356
13	RG & AL	View West across A2.32 of the River Irt	River Irt	-3.429	54.356
14	RG & AL	View South East across foreshore of the River Irt	River Irt	-3.432	54.357
15	RG & AL	View South East across foreshore of the River Irt	River Irt	-3.436	54.358
16	RG & AL	View North West across River Irt	River Irt	-3.436	54.365
17	RG & AL	View North West across channel between saltmarsh	River Irt	-3.437	54.360
18	RG & AL	View East towards railway bridge	River Esk	-3.410	54.340
19	RG & AL	View North along River Esk	River Esk	-3.410	54.343
20	RG & AL	View South along River Esk	River Esk	-3.411	54.345
21	RG & AL	View North across to Ravenglass from the Eskmeal Peninsular	River Esk	-3.409	54.350
22	RG & AL	Close up of coarse sediment	Ravenglass Estuary	-3.413	54.347
23	RG & AL	Close up of coarse sediment	Ravenglass Estuary	-3.415	54.344
24	RG & AL	View South across A2.111 of the Drigg Coast	Drigg Coast	-3.422	54.342
25	RG & AL	View South across the River Esk	River Esk	-3.409	54.346
26	RG & AL	View South East across A2.12 towards railway bridge	River Esk	-3.409	54.342
27	RG & AL	View North up River Esk	River Esk	-3.407	54.336
28	RG & AL	View East from station 13 across high shore section of A2.32	River Esk	-3.401	54.335
29	RG & AL	View West from station 14 across A2.23	River Esk	-3.402	54.336
30	RG & AL	View North from station 14 across A2.23	River Esk	-3.402	54.336
31	RG & AL	View North from station 15 across A2.23	River Esk	-3.402	54.337
32	RG & AL	View West from station 15 across A2.23	River Esk	-3.402	54.337
33	RG & AL	View East from station 15 across A2.23	River Esk	-3.402	54.337
34	RG & AL	View South West Across sand waves of A2.23	River Esk	-3.399	54.338
35	RG & AL	View West across the River Esk	River Esk	-3.387	54.341
36	RG & AL	View West across the River Esk no. 2	River Esk	-3.386	54.342
37	RG & AL	View South across A2.23	River Esk	-3.387	54.342
38	RG & AL	View West across the River Esk no. 3	River Esk	-3.387	54.342
39	RG & AL	View North across the River Esk	River Esk	-3.387	54.342
40	RG & AL	View South across A2.23 between sections of saltmarsh	River Esk	-3.880	54.345
41	RG & AL	View South across A2.23 of the Ravenglass Estuary	Ravenglass Estuary	-3.416	54.353
42	RG & AL	View West across A2.23 to Ravenglass	Ravenglass Estuary	-3.416	54.353
43	RG & AL	View North across A2.23	Ravenglass Estuary	-3.416	54.353
44	RG & AL	View East across A2.23	Ravenglass Estuary	-3.416	54.353
45	RG & AL	Panoramic view of the Ravenglass Estuary	Ravenglass Estuary	-3.416	54.353
46	RG & AL	*Arenicola* casts on the foreshore	Ravenglass Estuary	-3.416	54.353
47	RG & AL	Metal debris/Mooring point	Ravenglass Estuary	-3.414	54.354
48	RG & AL	Metal debris/Mooring point no.2	Ravenglass Estuary	-3.414	54.354
49	RG & AL	Boats moored at Ravenglass	Ravenglass Estuary	-3.414	54.354
50	RG & AL	*Salicornia* on the foreshore	Ravenglass Estuary	-3.419	54.352
51	RG & AL	View South West across patches of *Salicornia*	Ravenglass Estuary	-3.419	54.352
52	RG & AL	View North West across patches of *Salicornia*	Ravenglass Estuary	-3.419	54.352
53	RG & AL	View North East from station 08	Ravenglass Estuary	-3.418	54.353
54	RG & AL	View West from station 08	Ravenglass Estuary	-3.418	54.353
55	RG & AL	*Hydrobia* on forehore	Ravenglass Estuary	-3.418	54.353
56	RG & AL	Close up of A2.12 of station 07	Ravenglass Estuary	-3.421	54.352
57	RG & AL	View North West from station 07	Ravenglass Estuary	-3.421	54.352
58	RG & AL	View East from station 07	Ravenglass Estuary	-3.421	54.352

Frame No.	Taken By	Subject	Location	Longitude (WGS84)	Latitude (WGS84)
59	RG & AL	Panoramic view across River Irt and Ravenglass Estuary	Ravenglass Estuary	-3.422	54.354
60	RG & AL	View North Wetst up the River Irt	Ravenglass Estuary	-3.422	54.354
61	RG & AL	View across section of A2.12	Ravenglass Estuary	-3.422	54.353
62	RG & AL	Panoramic view across A2.12 next to station 06	Ravenglass Estuary	-3.420	54.344
63	RG & AL	View west from station 06	Ravenglass Estuary	-3.420	54.344
64	RG & AL	Sand waves near station 06	Ravenglass Estuary	-3.420	54.344
65	RG & AL	Sand waves near station 06 no. 2	Ravenglass Estuary	-3.420	54.344
66	RG & AL	View North Earth across Blue mussel bed	Ravenglass Estuary	-3.420	54.345
67	RG & AL	Close up of blue mussel bed	Ravenglass Estuary	-3.420	54.345
68	RG & AL	View North East from station 05	Ravenglass Estuary	-3.422	54.345
69	RG & AL	View East from station 05	Ravenglass Estuary	-3.422	54.345
70	RG & AL	View West from station 04	Ravenglass Estuary	-3.423	54.346
71	RG & AL	View East from station 04	Ravenglass Estuary	-3.423	54.346
72	RG & AL	View East across A2.23 of the Drigg Coast/Ravenglass Estuary	Ravenglass Estuary	-3.426	54.344
73	RG & AL	View West across A2.32 of the River Irt	River Irt	-3.418	54.359
74	RG & AL	View West across A2.32 of the River Irt no. 2	River Irt	-3.418	54.359
75	RG & AL	Panoramic view of the low shore of A2.23	River Irt	-3.420	54.356
76	RG & AL	View North West across A2.23	River Irt	-3.420	54.356
77	RG & AL	Panoramic view of Ravenglass Estuary	River Irt	-3.416	54.356
78	RG & AL	View South across Ravenglass Estuary	River Irt	-3.413	54.356
79	RG & AL	View North East towards River Mite	River Irt	-3.413	54.356
80	RG & AL	Panoramic view of A2.32 of the lower Irt	River Irt	-3.427	54.358
81	RG & AL	Panoramic view of A2.32 of the lower Irt no. 2	River Irt	-3.428	54.357
82	RG & AL	View South across River Irt	River Irt	-3.433	54.357
83	RG & AL	View North across River Irt	River Irt	-3.433	54.357
84	RG & AL	Panoramic view of the River Irt	River Irt	-3.433	54.357
85	RG & AL	Panoramic view of the Uperr River Irt	River Irt	-3.438	54.361
86	RG & AL	View North up the River Irt	River Irt	-3.438	54.361
87	RG & AL	Panoramic view of the Uperr River Irt	River Irt	-3.436	54.365
88	RG & AL	Panoramic view of the River Esk	River Esk	-3.411	54.346
89	RG & AL	Panoramic view of Drigg Coast/Ravenglass Estuary	Drigg Coast	-3.421	54.342
90	RG & AL	Close up of A2.12	Ravenglass Estuary	-3.413	54.346
91	RG & AL	View East across A2.12	Ravenglass Estuary	-3.413	54.346
92	RG & AL	Panoramic view of the Esk River	River Esk	-3.409	54.349
93	RG & AL	Panoramic view of the Mid Esk River	River Esk	-3.406	54.336
94	RG & AL	View North across A2.23	River Esk	-3.401	54.336
95	RG & AL	View North across A2.23 no. 2	River Esk	-3.401	54.336
96	RG & AL	View West across upper Esk	River Esk	-3.387	54.342
97	RG & AL	View North across A2.23 of the upper Esk River	River Esk	-3.361	54.341
98	RG & AL	View North up the Drigg Coast from station 03	Drigg Coast	-3.441	54.341
99	RG & AL	View East acriss Drigg Coast from station 03	Drigg Coast	-3.441	54.341
100	RG & AL	Peat Exposure on the Drigg Coast	Drigg Coast	-3.436	54.340
101	RG & AL	Peat Exposure on the Drigg Coast no. 2	Drigg Coast	-3.436	54.340
102	RG & AL	Peat Exposure on the Drigg Coast no. 3	Drigg Coast	-3.436	54.340
103	RG & AL	Peat Exposure on the Drigg Coast no. 4	Drigg Coast	-3.436	54.340
104	RG & AL	View North across the Drigg Coast from station 02	Drigg Coast	-3.437	54.343
105	RG & AL	View East across the Drigg Coast from station 02	Drigg Coast	-3.437	54.343
106	RG & AL	View South across the Drigg Coast from station 02	Drigg Coast	-3.437	54.343
107	RG & AL	View West across the Drigg Coast from station 02	Drigg Coast	-3.437	54.343
108	RG & AL	Panoramic view South from station 01	Drigg Coast	-3.434	54.344
109	RG & AL	View South across areas of A2.23 and patches of A2.11	Drigg Coast	-3.430	54.343
110	RG & AL	View East across the A2.3 of the Mite	Mite River	-3.410	54.360
111	RG & AL	View West across the A2.3 of the Mite	Mite River	-3.410	54.360
112	RG & AL	View South East across section of the Mite foreshore	Mite River	-3.411	54.360
113	RG & AL	View West across the River Mite	Mite River	-3.405	54.361
114	RG & AL	Panoramic view North of the River Mite	Mite River	-3.408	54.362
115	RG & AL	View North of the upper Mite	Mite River	-3.398	54.359
116	RG & AL	View South West from station 17	Mite River	-3.409	54.360
117	RG & AL	View North from Ravenglass	Ravenglass Estuary	-3.412	54.356
118	RG & AL	View south from Ravenglass	Ravenglass Estuary	-3.412	54.354
119	RG & AL	Panoramic view of the Ravenglass Estuary no. 2	Ravenglass Estuary	-3.412	54.353

Frame No.	Taken By	Subject	Location	Longitude (WGS84)	Latitude (WGS84)
120	RG & AL	View South along the River Esk from Ravenglass	Ravenglass Estuary	-3.408	54.351
121	RG & AL	View North along River Esk A2.12 of the River Esk	River Esk	-3.405	54.348
122	RG & AL	*Arenicola* casts on the foreshore of the River Esk	River Esk	-3.407	54.343

Appendix Table 9. Method statements for the multivariate statistical routines that were performed on the data collected during the October 2013 Drigg Coast SAC intertidal survey.

Hierarchical Cluster Analysis

Cluster analysis aims to find "natural groupings" such that samples within a group are more similar to each other than samples in different groups. The most commonly used clustering techniques are the hierarchical agglomerative methods. These start with a similarity matrix and "fuse" the samples into groups and the groups into larger clusters, starting with the highest mutual similarities then gradually lowering the similarity level at which groups are formed until all of the samples are contained in a single cluster. The results of hierarchical clustering are represented by a tree diagram or dendrogram, with the *x*-axis representing the full set of samples and the *y*-axis representing the similarity level at which the groups are considered to have fused.

Multidimensional Scaling (MDS) Ordination

This technique allows the construction of a configuration of the samples in multidimensional space. This configuration attempts to position the samples as accurately as possible to reflect their similarity. For example, if sample 1 has a greater similarity to sample 2 than it does to sample 3 then sample 1 will be positioned more closely to sample 2 than it is to sample 3. This "map" of the relative similarities between samples is then plotted in two dimensions. It is important to remember that this two-dimensional plot is a representation of a multidimensional picture. When large numbers of samples are analysed, or datasets that include samples that are very different to one another the accuracy of the plot may be reduced. A measure of this stress on the two-dimensional representation is given on the MDS plot. Stress values <0.2 correspond to a good ordination; values between 0.2 and 0.3 give a useful two-dimensional picture but one should not place too much reliance on the fine details of the plot; stress >0.3 indicates that the samples are close to being positioned in an arbitrary manner and should not be regarded as necessarily similar to one another.

The SIMPER routine

The SIMPER routine allows comparisons between groups of samples to be made. Following the comparison of similarities between groups the taxa (or particle size fractions) responsible for the dissimilarities between sites are sub-listed in decreasing order of importance in order to facilitate the discrimination of the groups. This routine also provides information on the species responsible for within-site similarities and their contribution to the internal similarity of the group.

Analysis of Similarity (ANOSIM)

This was used to test the null hypothesis (H_o) that there are no differences in community composition between the pooled sample categories featured in the present investigation. This routine goes through three main stages in the examination of H_o.

These are as follows:-

1. The calculation of the ANOSIM statistic from the dataset.
2. Recalculation of the R statistic under permutations of the sample labels.
3. Calculating the significance level.

The results expressed represent the extent of the similarities and differences between pooled data.

Note:

R Statistic approaching zero = very slight differences & therefore a high degree of overlap between the groups

R Statistic of 0.2-0.3 – some difference but still with some degree of overlap between the groups

R Statistic approaching 1 (>0.5) = large differences & therefore only slight overlap between the groups

However, it is important to remember the importance of the statistical significance of the R Statistic. This value assists in the determination of whether the R statistical returned by the test is a 'real' result, which was unlikely to be achieved by chance, or whether the R value is in fact coincidental bi-product of the sample data.

Matching Two Multivariate Patterns (RELATE & BIO-ENV)

The RELATE routine provides a means of testing for correlations between two multivariate patterns. This is used to test for correlations between biological communities and environmental variables, in this case sediment composition. The BIO-ENV routine is an exploratory tool that matches multivariate patterns so that combinations of variables are considered at ever increasing levels of complexity in order to find the BEST sub-set of variables that match with the biological patterns.

Appendix Table 10. Assessment criteria of selected hazardous substances in sediments, taken from the CEMP data assessment (OSPAR, 2012).

Group	Substance	SEDIMENT (µg/kg dry weight)						MUSSELS (M) AND OYSTERS (O) (µg/kg dry weight except EC for metals: wet weight (ww))				FISH (µg/kg wet weight, except: $EAC^{passive}$ for CB: lipid weight (lw))			
		Background/low concentrations		Blue (T_0)		Green (T_1)			Blue (T_0)	Green (T_1)			Blue (T_0)	Green (T_1)	Amber (T_1)
		BC	LC Spain	< BAC	< BAC Spain	< EAC	< ERL	BC/LC	< BAC	< EAC	< EC	BC/LC	< BAC	< EAC passive	< EC max. food limit
	Cd	200	86	310	129		1200	M-600 O-1800	M-960 O-3000		M-1000 O-1000	a	26		1000 (bivalve. tissue)
	Hg	50	53	70	91		150	M-50 O-100	M-90 O-180		M-500 O-500	a	35		500
	Pb	25000	15500	38000	22400		47000	M-800 O-800	M-1300 O-1300		M-1500 O-1500	a	26		1500 (bivalve. tissue)
	As	15000		25000			---								
	Cr	60000		81000			81000								
	Cu	20000		27000			34000		6000						
	Ni	30000		36000			---								
	Zn	90000		122000			150000		63000						
	TBT	---		---		---		1.0	5.0	12.0					
	Naphthalene	5	---	8	---		160	---	---	340					
	C1-naphthalene						155[2]								
	C2-naphthalene						150								
	Phenanthrene	17	4.0	32	7.3		240	4.0	11.0	1700					
	C1-phenanthrene						170								
	C2-phenanthrene						200								
	Anthracene	3	1.0	5	1.8		85	---	---	290					
	Dibenzothiophene (DBT)	0.6	---	---	---		190	---	---	---					
	C1-dibenzothiophene						85								
	Fluoranthene	20	7.5	39	14.4		600	5.5	12.2	110					
	Pyrene	13	6.0	24	11.3		665	4.0	9.0	100					
	Benz[a]anthracene	9	3.5	16	7.1		261	1.0	2.5	80					
	Chrysene (Triphenylene)	11	4.0	20	8.0		384	4.0	8.1	---					
	Benzo[a]pyrene	15	4.0	30	8.2		430	0.5	1.4	600					
	Benzo[ghi]perylene	45	3.5	80	6.9		85	1.5	2.5	110					
	Indeno[1,2,3-cd]pyrene	50	4.0	103	8.3		240	1.0	2.4	---					
	CB28	0.0/0.05		0.22		1.7		0.0/0.25	0.75	3.2		0.0/0.05	0.10	64 lw	
	CB52	0.0/0.05		0.12		2.7		0.0/0.25	0.75	5.4		0.0/0.05	0.08	108 lw	
	CB101	0.0/0.05		0.14		3.0		0.0/0.25	0.70	6.0		0.0/0.05	0.08	120 lw	

[2] Sum of 1-methyl naphthalene and 2-methyl naphthalene

Group	Substance	SEDIMENT (µg/kg dry weight)						MUSSELS (M) AND OYSTERS (O) (µg/kg dry weight except EC for metals: wet weight (ww))				FISH (µg/kg wet weight, except: $EAC^{passive}$ for CB: lipid weight (lw))			
		Background/low concentrations		Blue (T_0)		Green (T_1)			Blue (T_0)	Green (T_1)			Blue (T_0)	Green (T_1)	Amber (T_1)
		BC	LC Spain	< BAC	< BAC Spain	< EAC	< ERL	BC/LC	< BAC	< EAC	< EC	BC/LC	< BAC	< EAC passive	< EC max. food limit
	CB105	---		---		---		0.0/0.25	0.75	---		0.0/0.05	0.08	---	
	CB118	0.0/0.05		0.17		0.6		0.0/0.25	0.60	1.2		0.0/0.05	0.10	24 lw	
	CB138	0.0/0.05		0.15		7.9		0.0/0.25	0.60	15.8		0.0/0.05	0.09	316 lw	
	CB153	0.0/0.05		0.19		40		0.0/0.25	0.60	80		0.0/0.05	0.10	1600 lw	
	CB156	---		---		---		0.0/0.25	0.60	---		0.0/0.05	0.08	---	
	CB180	0.0/0.05		0.10		12		0.0/0.25	0.60	24		0.0/0.05	0.11	480 lw	
Pesticide	γ-HCH	0.0/0.05	0.13				3.0	0.0/0.25	0.97	1.45	---	---	---	11[b]	
Pesticide	α-HCH	---	---				---	0.0/0.25	0.64	---	---	---	---	---	
Pesticide	DDE (p,p')	0.0/0.05	0.09				2.2	0.0/0.25	0.63	---	---	0.0/0.05	0.10	---	
Pesticide	Hexachlorobenzene	0.0/0.05	0.16				20.0	0.0/0.25	0.63	---	---	0.0/0.05	0.09	---	
Pesticide	Dieldrin	0.0/0.05	0.19				2.0	---	---	---	---	---	---	---	

* datasets too limited to allow recommendation for BCs for metals in fish; [b]EAC for fish liver derived by applying a conversion factor of 10 on EAC for whole fish

Notes

- No assessment criteria for PBDE.
- Assessment criteria are used to assess contaminant concentrations
  - **B**ackground **A**ssessment **C**oncentration (BAC)
  - **E**nvironmental **A**ssessment **C**riteria (EAC)
  - **E**ffects **R**ange **L**ow (ERL)
  - **E**uropean **C**ommission food standard (EC)
- BACs were developed by the OSPAR Commission (OSPAR) for testing whether concentrations are near background levels. Mean concentrations significantly below the BAC are said to be near background.
- BACs and $EAC^{passive}$s are available for seven CBs.
- EACs were developed by OSPAR and the International Council for the Exploration of the Sea for assessing the ecological significance of sediment concentrations. Concentrations below the EAC should not cause any chronic effects in marine species.
- BACs and / or EACs are available for ten PAHs.
- $EAC^{passive}$s were developed by OSPAR for assessing the ecological significance of sediment concentrations. Concentrations below the $EAC^{passive}$ should cause no chronic effects in marine species.
- ERLs were developed by the United States Environmental Protection Agency for assessing the ecological significance of sediment concentrations. Concentrations below the ERL rarely cause adverse effects in marine organisms. Concentrations *above* the ERM will often cause adverse effects in some marine organisms.
- ECs have been used in the absence of any satisfactory criteria for assessing the ecological significance of biota concentrations. ECs are the maximum acceptable concentrations in food for the protection of public health.

Appendix Table 11. Contact prints of each station sampled as part of the October 2013 Drigg Coast SAC intertidal survey.


NEDCSAC1013 01.JPG


NEDCSAC1013 02.JPG


NEDCSAC1013 03.JPG


NEDCSAC1013 04.JPG


NEDCSAC1013 05.JPG

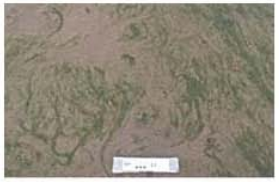

NEDCSAC1013 06.JPG


NEDCSAC1013 07.JPG


NEDCSAC1013 08.JPG


NEDCSAC1013 09.JPG


NEDCSAC1013 10.JPG


NEDCSAC1013 11.JPG


NEDCSAC1013 12.JPG


NEDCSAC1013 13.JPG


NEDCSAC1013 14.JPG


NEDCSAC1013 15.JPG


NEDCSAC1013 16.JPG


NEDCSAC1013 17.JPG


NEDCSAC1013 18.JPG


NEDCSAC1013 19.JPG


NEDCSAC1013 20.JPG


NEDCSAC1013 21.JPG