<u>**Final Report**</u>

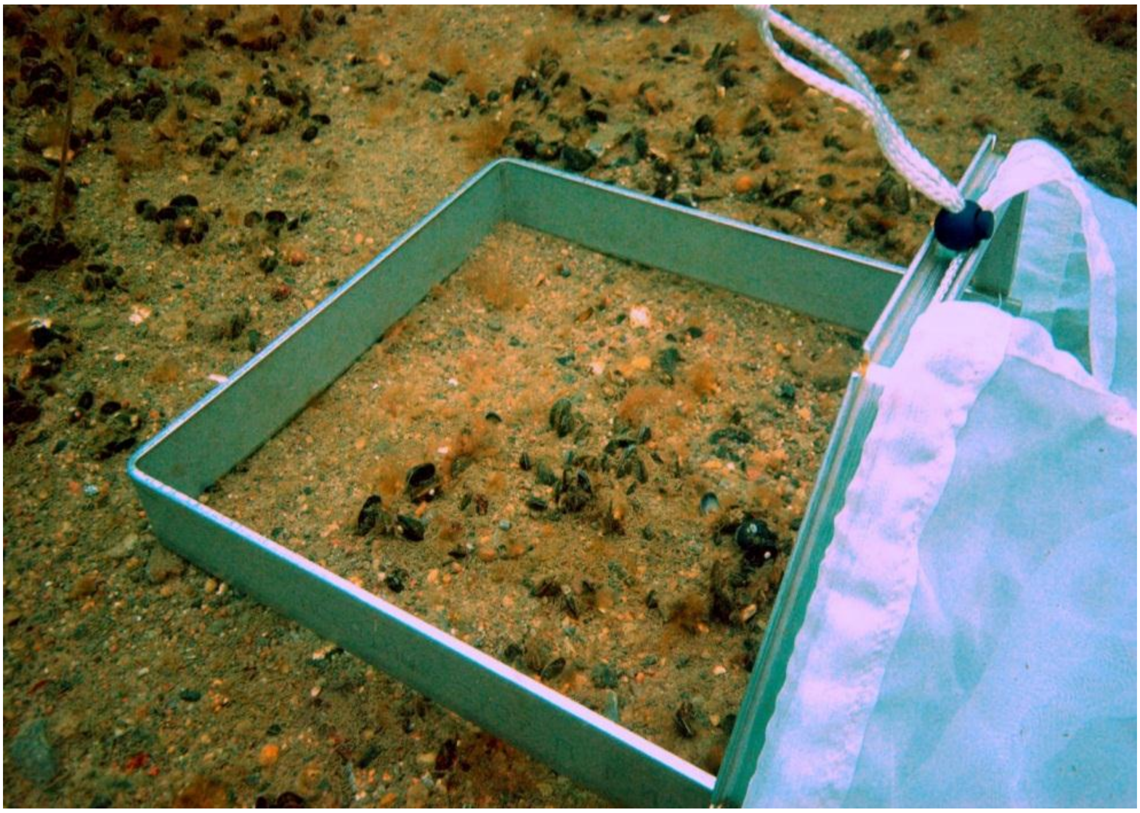
FEHMARNBELT FIXED LINK
Marine Biology Services (FEMA)

Marine Fauna and Flora - Baseline

Benthic Fauna of the Fehmarnbelt Area

E2TR0020 Volume II

APPENDIX



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Note to the reader:
In this report the time for start of construction is artificially set to 1 October 2014 for the tunnel and 1 January 2015 for the bridge alternative. In the Danish EIA (VVM) and the German EIA (UVS/LBP) absolute year references are not used. Instead the time references are relative to start of construction works. In the VVM the same time reference is used for tunnel and bridge, i.e. year 0 corresponds to 2014/start of tunnel construction; year 1 corresponds to 2015/start of bridge construction etc. In the UVS/LBP individual time references are used for tunnel and bridge, i.e. for tunnel construction year 1 is equivalent to 2014 (construction starts 1 October in year 1) and for bridge construction year 1 is equivalent to 2015 (construction starts 1st January).

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Video Transects (Position, Approximate Length and Depth Range) Visited in 2009 and 2010

Tab.App.1- 1 The start and end locations of the underwater video transects in the Fehmarnbelt area, during 2009 and 2010. The reference system of the positions is WGS84.

Transect ID	Start		End		Approximate length	Depth range
	Longitude	Latitude	Longitude	Latitude	(Km)	(m)
Lolland coast						
LoR-W-09	10º 59,00	54º 46,90	10º 54,00	54º 45,00	6.4	2.8-13.5
LoR-W-08	11º 00,20	54º 45,60	10º 58,00	54º 43,80	4.1	2.8-10.1
LoR-W-07	11º 04,00	54º 44,60	11º 02,50	54º 42,70	4.0	2.5-12.2
Lo-W-06	11º 08,00	54º 43,90	11º 06,25	54º 41,85	4.3	2.9-15.7
Lo-W-05	11º 11,20	54º 43,15	11º 08,90	54º 41,00	4.7	2.1-16.2
Lo-W-04	11º 14,10	54º 42,45	11º 12,30	54º 40,35	4.3	3.3-13.7
Lo-W-03	11º 16,70	54º 41,60	11º 14,50	54º 39,00	5.3	4.1-15.0
Lo-W-02	11º 18,80	54º 40,35	11º 16,40	54º 37,60	5.5	3.7-15.0
Lo-W-01	11º 20,25	54º 39,50	11º 18,10	54º 37,00	5.0	4.9-16.7
Lo-00-00	11º 21,75	54º 38,80	11º 19,80	54º 36,50	4.9	2.1-16.0
Lo-E-01	11º 22,70	54º 38,50	11º 20,50	54º 36,05	4.9	1.9-16.2
Lo-E-02	11º 23,50	54º 38,30	11º 21,55	54º 36,05	4.5	1.7-14.0
Lo-E-03	11º 25,10	54º 37,65	11º 22,90	54º 35,10	5.0	1.9-12.4
Lo-E-04	11º 27,35	54º 36,55	11º 25,20	54º 34,10	5.0	2.2-16.5
LoR-E-05	11º 45,00	54º 32,50	11º 45,00	54º 29,50	5.6	6.9-16.6
LoR-E-06	11º 51,00	54º 33,80	11º 51,00	54º 30,70	5.8	2.7-9.6
LoR-E-07	11º 59,75	54º 32,65	12º 04,40	54º 30,70	6.0	6.8-8.9
Total Lolland					85	
Rødsand Lagoon						
RO-01	11º 31,50	54º 38,20	11º 31,50	54º 35,90	4.3	1.0-2.6
RO-02	11º 35,00	54º 39,40	11º 35,00	54º 35,60	6.5	0.5-2.5
RO-03	11º 39,00	54º 39,40	11º 39,00	54º 35,70	6.5	1.0-3.5
RO-04	11º 43,00	54º 39,00	11º 43,00	54º 36,10	5.3	0.7-5.3
RO-05	11º 47,00	54º 38,80	11º 47,00	54º 35,00	6.8	1.6-7.5
RO-06	11º 51,00	54º 39,00	11º 51,00	54º 34,50	8.3	5.5-7.9
Total Rødsand					44	
Langeland						
LA-01	10º 46,10	54º 47,00	10º 48,10	54º 47,00	2.1	1.9-18.4
LA-02	10º 45,40	54º 46,00	10º 47,00	54º 46,00	2.3	1.8-19.1
LA-03	10º 44,70	54º 45,00	10º 46,50	54º 45,00	2.3	3.3-22.0
LA-04	10º 44,10	54º 44,00	10º 46,00	54º 44,00	2.3	3.5-26.0
Total Langeland					9	
Eastern Kiel Bight including Orth Bight						
FE-S-W01	11° 12,75	54° 30,40	11° 13,48	54° 31,12	1.8	1.6-12.3
FE-S-W02	11° 11,06	54° 31,04	11° 12,57	54° 32,56	3.7	0.7-26.6
FE-S-W04	11° 06,28	54° 31,75	11° 06,94	54° 33,78	4.0	1.2-19.0
FE-S-W05	11° 03,63	54° 32.00	11° 03,68	54° 34,63	4.9	1.5-21.2
FE-S-W06	11° 02,00	54° 30,84	10° 59,09	54° 32,15	3.5	0.3-10.3
FE-S-W08	11° 00,52	54° 28,43	10° 55,49	54° 29,46	5.9	1.2-10.0
KB-S-W01	10° 52,65	54° 28,72	10° 52,82	54° 32,03	6.4	11.0-15.8
KB-S-W02	10° 49,55	54° 32,45	10° 49,29	54° 28,75	7.0	11.4-20.4
KB-S-W03	10° 45,78	54° 28,48	10° 45,95	54° 31,50	5.8	11.5-32.5
OB-S-W01	11° 04,60	54° 26,68	11° 05,16	54° 24,43	4.6	0.7-6.4
OB-S-W02	11° 02,57	54° 26,60	11° 03,33	54° 24,86	3.7	0.5-7.0
Total					51.3	

Transect ID	Start		End		Approximate length (Km)	Depth range (m)
	Longitude	Latitude	Longitude	Latitude		
Staberhuk						
FE-S-E01	11° 14,63	54° 29,36	11° 17,49	54° 30,35	5.1	2.0-21.6
FE-S-E02	11° 15,68	54° 28,12	11° 19,49	54° 29,03	4.9	1.6-21.8
FE-S-E03	11° 16,65	54° 27,12	11° 20,95	54° 28,11	5.1	1.6-23.1
FE-S-E04	11° 17,97	54° 25,61	11° 21,92	54° 26,67	5.4	1.8-19.5
FE-S-E06	11° 18,75	54° 24,55	11° 21,94	54° 24,43	4.2	1.6-20.3
FE-S-E07	11° 18,83	54° 24,16	11° 20,53	54° 23,68	2.1	2.1-17.3
FE-S-E09	11° 17,69	54° 24,19	11° 17,83	54° 23,47	1.5	1.5-11.7
Total					28.3	
Sagasbank						
SB-S-E02	11° 12,21	54° 18,29	11° 12,04	54° 14,98	6.8	8.1-20.9
SB-S-E04	11° 10,16	54° 18,26	11° 10,10	54° 15,18	6.1	9.3-14.3
Total					12.9	
Großenbrode						
GR-S-E02	11° 07,85	54° 22,80	11° 10,22	54° 22,88	3.3	0.5-6.8
GR-S-E04	11° 07,48	54° 22,33	11° 09,52	54° 21,25	3.5	1.5-9.4
GR-S-E06	11° 06,29	54° 21,80	11° 07,37	54° 20,81	2.7	1.4-11.9
Total					9.5	
Fehmarnbelt						
BE-S-W01	11° 01,57	54° 38,72	11° 01,66	54° 37,33	4.9	17.4-38.2
BE-S-W02	10° 58,96	54° 36,13	10° 59,35	54° 38,42	4.7	17.8-34.8
BE-S-W03	10° 56,74	54° 36,55	10° 56,32	54° 33,87	5.3	12.6-28.1
BE-S-W04	10° 52,22	54° 32,45	10° 52,64	54° 34,10	4.6	14.3-23.4
Total					19.5	

A P P E N D I X 2

List of all macrozoobenthic species observed during the sampling in 2009 and 2010

List of all macrozoobenthic species observed during the sampling in 2009 and 2010 over all stations for different communities. Ris- Rissoa; Arc- Arctica; Bat; Bathyporeia; Cer- Cerastoderma; Cor- Corbula; Den- Dendrodoa; Gam- Gammarus; Myt- Mytilus; Tan- Tanaissus.

Tab.App.2- 1 List of all macrozoobenthic species observed during the sampling in 2009 and 2010

Species name/Taxa	**Ris**	**Arc**	**Bat**	**Cer**	**Cor**	**Den**	**Gam**	**Myt**	**Tan**
Abra alba (Wood W., 1802)		X		X	X	X	X	X	X
Abra sp. Leach in Lamarck, 1818		X				X			
Acanthodoris pilosa (Abildgaard in Müller, 1789)						X	X	X	X
Actinia equina (Linnaeus, 1758)		X			X	X			X
Aeginina longicornis (Kroyer, 1843)		X							
Akera bullata Müller O.F., 1776							X		
Alcyonidium diaphanum (Hudson, 1778)		X			X	X	X	X	X
Alcyonidium polyoum (Hassall, 1841)		X			X	X	X	X	X
Alcyonidium sp. Lamouroux, 1813							X		
Alitta succinea (Frey & Leuckart, 1847)	X	X	X	X	X	X	X	X	X
Alitta virens (M. Sars, 1835)		X			X	X		X	X
Alvania sp. Risso, 1826						X			
Amauropsis islandica (Gmelin, 1791)						X			X
Ampelisca brevicornis (Costa, 1853)		X							
Ampharete acutifrons (Grube, 1860)		X			X	X		X	
Ampharete baltica Eliason, 1955		X		X	X	X	X	X	X
Ampharetidae Malmgren, 1866				X					
Amphilectus lobatus (Montagu, 1818)						X			
Amphitrite cirrata (O. F. Müller, 1771 in 1776)		X				X		X	X
Ampithoe rubricata (Montagu, 1808)		X		X		X	X	X	X
Anaitides mucosa (Oersted, 1843)		X		X	X	X	X	X	X
Ancula gibbosa (Risso, 1818)		X			X	X			X
Anthozoa						X	X		
Aonides paucibranchiata Southern, 1914		X							
Apherusa bispinosa (Bate, 1857)		X			X	X	X		X
Aporrhais pespelecani (Linnaeus, 1758)		X			X	X			
Arctica islandica (Linnaeus, 1767)		X		X	X	X	X	X	X
Arenicola marina Lamarck, 1801	X	X	X	X	X	X	X	X	X
Aricidea minuta Southward, 1956		X			X	X	X	X	X
Aricidea sp. Webster, 1879								X	
Aricidea suecica Eliason, 1920		X			X	X	X	X	X
Ascidiacea Nielsen, 1995						X			
Astarte borealis (Schumacher, 1817)		X			X	X	X		X
Astarte elliptica (Brown, 1827)		X			X	X	X		X
Astarte montagui (Dillwyn, 1817)		X			X	X	X		
Asterias rubens Linnaeus, 1758		X		X	X	X	X	X	X
Autonoe longipes (Liljeborg, 1852)						X			X
Balanus balanus (Linnaeus, 1758)		X				X			
Balanus crenatus Bruguiére, 1789		X			X	X	X	X	X
Balanus improvisus Darwin, 1854		X	X	X	X	X	X	X	
Barentsia gracilis M. Sars, 1835		X				X			X
Bathyporeia elegans Watkin, 1938									X

Species name/Taxa	Ris	Arc	Bat	Cer	Cor	Den	Gam	Myt	Tan
Bathyporeia guilliamsoniana (Bate, 1857)						X	X		X
Bathyporeia nana Toulmond, 1966							X		
Bathyporeia pilosa Lindström, 1855			X	X	X	X	X	X	X
Bathyporeia sarsi Watkin, 1938						X	X		
Bathyporeia sp. Lindstrom, 1855			X	X		X	X	X	
Bittium reticulatum (da Costa, 1778)		X	X	X	X	X	X	X	X
Boreotrophon truncatus (Ström, 1768)		X				X			
Bougainvillia muscus (Allman, 1863)					X				
Bowerbankia gracilis Leidy, 1855		X				X	X	X	X
Buccinum undatum Linnaeus, 1758		X				X			X
Bugula plumosa (Pallas, 1766)		X							
Bylgides sarsi (Kinberg in Malmgren, 1866)	X	X	X	X	X	X	X	X	X
Calliopaea bellula d'Orbigny, 1837						X			
Calliopius laeviusculus (Kroyer, 1838)			X	X	X	X	X	X	
Callipallene brevirostris (Johnston, 1837)		X				X			X
Callopora lineata (Linnaeus, 1767)		X		X	X	X	X	X	X
Callopora sp. Gray, 1848						X	X		
Calycella syringa (Linnaeus, 1758)		X				X			X
Capitella capitata (Fabricius, 1780)		X	X		X	X	X	X	X
Capitella sp. Blainville, 1828			X	X			X	X	
Caprella linearis (Linnaeus, 1767)		X		X		X	X	X	X
Caprella septentrionalis Krøyer, 1838		X				X			X
Carcinus maenas (Linnaeus, 1758)		X	X	X	X	X	X	X	X
Caulleriella killariensis (Southern, 1914)		X				X	X		
Celleporella hyalina (Linnaeus, 1767)					X				
Cerastoderma edule (Linnaeus, 1758)			X	X	X	X	X	X	
Cerastoderma glaucum (Poiret, 1789)	X		X	X	X		X	X	
Chaetozone setosa Malmgren, 1867		X			X	X	X		X
Chaetozone sp. Malmgren, 1867						X			
Chalinula limbata (Montagu, 1818)		X			X	X	X	X	X
Cheirocratus sundevalli (Rathke, 1843)		X				X	X		X
Chironomidae	X	X	X	X	X	X	X	X	X
Chrysallida interstincta (Adams J., 1797)						X			
Ciona intestinalis (Linnaeus, 1758)		X				X	X		X
Cirratulidae Carus, 1863							X	X	
Cirrophorus eliasoni (Mackie, 1991)		X			X	X			
Clava multicornis (Forsskål, 1775)		X						X	
Clytia hemisphaerica (Linnaeus, 1767)		X							
Cochlodesma praetenue (Pulteney, 1799)		X				X			
Coleoptera	X								
Corbula gibba (Olivi, 1792)		X		X	X	X	X	X	X
Corophium affine Bruzelius, 1859		X				X			
Corophium arenarium Crawford, 1937								X	
Corophium crassicorne Bruzelius, 1859		X	X		X	X	X	X	X
Corophium insidiosum Crawford, 1937		X	X	X	X	X	X	X	X
Corophium sp. Latreille, 1806							X	X	

Species name/Taxa	Ris	Arc	Bat	Cer	Cor	Den	Gam	Myt	Tan
Corophium volutator (Pallas, 1766)	X		X	X			X	X	
Corymorpha nutans Sars, 1835		X							
Crangon crangon (Linnaeus, 1758)	X	X	X	X	X	X	X	X	X
Crenella decussata (Montagu, 1808)		X				X			
Cribrilina punctata (Hassall, 1841)		X				X			X
Crisia denticulata (Lamarck, 1816)		X			X	X			X
Cyanophthalma obscura (Schultze, 1851)		X			X	X		X	X
Cyathura carinata (Krøyer, 1847)	X		X	X			X	X	
Dendrodoa grossularia (Van Beneden, 1846)		X			X	X	X	X	X
Dendronotus frondosus (Ascanius, 1774)		X							
Dexamine spinosa (Montagu, 1813)						X	X		X
Diaphana minuta Brown, 1827		X			X	X	X		
Diastylis rathkei (Krøyer, 1841)		X		X	X	X	X	X	X
Dipolydora caulleryi (Mesnil, 1897)		X				X			
Dipolydora quadrilobata (Jacobi, 1883)		X		X	X	X	X	X	X
Dodecaceria concharum Örsted, 1843		X							
Doto coronata (Gmelin, 1791)						X			
Dynamena pumila (Linnaeus, 1758)		X	X	X	X	X	X	X	X
Dyopedos monacantha (Metzger, 1875)		X				X	X	X	X
Ebala nitidissima (Montagu, 1803)							X		
Echinocyamus pusillus (O.F. Müller, 1776)		X			X	X	X		X
Edwardsia danica Carlgren, 1921		X			X	X	X		X
Edwardsia sp. de Quatrefages, 1842		X			X	X	X		
Ekmania barthii (Troschel, 1846)		X			X	X	X		
Electra crustulenta (Pallas, 1766)		X			X	X	X	X	X
Electra pilosa (Linnaeus, 1767)		X	X	X	X	X	X	X	X
Enchytraeidae		X				X	X		X
Enipo kinbergi Malmgren, 1866		X				X			
Ensis directus (Conrad, 1843)			X	X	X	X	X	X	X
Ericthonius punctatus (Bate, 1857)		X		X		X	X		X
Erinaceusyllis erinaceus (Claparède, 1863)					X	X			X
Escharella immersa (Fleming, 1828)		X			X	X	X	X	X
Eteone barbata Malmgren, 1865		X				X			
Eteone flava (Fabricius, 1780)		X				X			
Eteone longa (Fabricius, 1780)	X	X	X	X	X	X	X	X	X
Eteone sp. Savigny, 1818	X		X	X			X	X	
Euchone papillosa (Sars, 1851)		X				X	X		
Eucratea loricata (Linnaeus, 1758)		X			X	X	X	X	X
Eudorella truncatula (Bate, 1856)		X							
Eudorellopsis deformis (Krøyer, 1846)		X				X			X
Eulalia bilineata (Johnston, 1840)		X			X	X	X	X	X
Eumida sanguinea (Örsted, 1843)		X			X	X	X		X
Eumida sp. Malmgren, 1865						X	X		
Eupolymnia sp.						X			
Euspira pulchella (Risso, 1826)					X				
Exogone hebes (Webster & Benedict, 1884)		X			X	X		X	X
Exogone naidina Örsted, 1845		X			X	X	X	X	X

Species name/Taxa	Ris	Arc	Bat	Cer	Cor	Den	Gam	Myt	Tan
Fabricia stellaris (Müller, 1774)						X	X	X	
Fabriciola baltica Friedrich, 1939		X		X	X	X	X	X	X
Facelina bostoniensis (Couthouy, 1838)		X			X	X	X	X	X
Farrella repens (Farre, 1837)		X			X	X	X		X
Flabelligera affinis M. Sars, 1829		X				X	X	X	X
Flustra foliacea (Linnaeus, 1758)		X			X	X	X	X	X
Flustrellidra hispida (O. Fabricius, 1780)						X			
Gammarellus homari (Fabricius 1779)		X			X	X	X	X	X
Gammaridae Latreille, 1802				X					
Gammaropsis maculata (Johnston, 1828)						X			X
Gammarus inaequicauda Stock, 1966			X					X	
Gammarus locusta (Linnaeus, 1758)			X	X			X	X	
Gammarus oceanicus Segerstråle, 1947		X	X		X		X	X	
Gammarus salinus Spooner, 1947	X	X	X		X	X	X	X	
Gammarus sp. Fabricius, 1775	X		X	X			X	X	
Gammarus zaddachi Sexton, 1912							X	X	
Garveia franciscana (Torrey, 1902)		X				X			
Gastrosaccus spinifer (Goës, 1864)		X	X	X	X	X	X	X	X
Gattyana cirrhosa (Pallas, 1766)		X					X		
Gitana sarsi Boeck, 1871		X				X	X		X
Halacaridae Murray, 1877		X			X	X	X	X	X
Halcampa duodecimcirrata (Sars, 1851)		X			X	X	X		X
Halichondria panicea (Pallas, 1766)		X			X	X	X		X
Haliclona oculata (Pallas, 1766)		X			X	X			X
Halicryptus spinulosus von Siebold, 1849		X			X	X			
Halisarca dujardini Johnston, 1842		X			X	X	X		X
Halitholus yoldiaarcticae (Birula, 1897)		X			X	X		X	X
Harmothoe imbricata (Linnaeus, 1767)		X			X	X	X	X	X
Harmothoe impar (Johnston, 1839)	X	X	X	X	X	X	X	X	X
Harmothoe sp. Kinberg, 1856							X	X	
Hartlaubella gelatinosa (Pallas, 1766)		X			X	X	X	X	X
Haustorius arenarius (Slabber, 1767)			X	X	X			X	
Hediste diversicolor (O.F. Müller, 1776)	X		X	X	X		X	X	
Heteromastus filiformis (Claparède, 1864)	X	X	X	X	X	X	X	X	X
Heterotanais oerstedi (Kroyer, 1842)	X							X	
Hiatella arctica (Linnaeus, 1767)		X			X	X	X	X	X
Hyas araneus (Linnaeus, 1758)		X							
Hydractinia echinata Fleming, 1823		X			X	X			
Hydrobia ulvae (Pennant, 1777)	X	X	X	X	X	X	X	X	X
Hydrobia ventrosa (Montagu, 1803)					X	X	X		
Hydrozoa Owen, 1843				X			X		
Hyperia galba (Montagu, 1815)		X				X	X		
Idotea balthica (Pallas, 1772)	X	X	X	X	X	X	X	X	X
Idotea chelipes (Pallas, 1766)	X	X	X	X	X	X	X	X	
Idotea granulosa Rathke, 1843						X	X	X	X
Idotea sp. Fabricius, 1798			X	X			X	X	

Species name/Taxa	Ris	Arc	Bat	Cer	Cor	Den	Gam	Myt	Tan
Ischyrocerus anguipes Krøyer, 1838		X				X			X
Jaera albifrons Leach, 1814	X	X	X			X	X	X	
Kurtiella bidentata (Montagu, 1803)		X	X	X	X	X	X	X	X
Lacuna pallidula (da Costa, 1778)		X				X	X		X
Lacuna parva (da Costa, 1778)		X							
Lacuna vincta (Montagu, 1803)						X	X	X	
Lagis koreni Malmgren, 1866		X		X	X	X	X	X	X
Lamprops fasciatus G.O. Sars, 1863						X			X
Lanice conchilega Pallas, 1766		X				X			X
Laonome kroeyeri Malmgren, 1866		X			X	X			
Lekanesphaera hookeri (Leach, 1814)	X			X				X	
Lepidochitona cinerea (Linnaeus, 1767)		X				X	X		X
Lepidonotus squamatus (Linnaeus, 1758)		X				X	X	X	X
Leucosolenia sp. Bowerbank, 1864		X				X			X
Levinsenia gracilis (Tauber, 1879)		X			X	X	X		
Lineus ruber (Müller, 1774)		X			X	X	X	X	X
Littorina littorea (Linnaeus, 1758)	X		X	X	X	X	X	X	
Littorina saxatilis (Olivi, 1792)	X		X	X			X	X	
Loxosomella sp. Mortensen, 1911		X							
Lysilla loveni Malmgren, 1866		X			X	X	X		X
Macoma balthica (Linnaeus, 1758)	X	X	X	X	X	X	X	X	X
Macoma calcarea (Gmelin, 1791)		X			X	X			X
Macropodia deflexa Forest, 1978		X							
Macropodia linaresi Forest & Zariquiey-Alvarez, 1964						X			
Magelona johnstoni Fiege, Licher & Mackie, 2000							X		
Malacobdella grossa (Müller, 1776)		X			X	X	X		X
Marenzelleria neglecta Sikorski & Bick, 2004	X		X					X	
Marenzelleria sp. Mesnil, 1896	X		X	X				X	
Marenzelleria viridis (Verrill, 1873)	X	X	X	X		X	X	X	
Megamphopus cornutus Norman, 1869		X			X	X	X	X	X
Melita palmata (Montagu, 1804)	X						X	X	
Melita sp. Leach, 1814								X	
Membranipora membranacea (Linnaeus, 1767)							X		
Metridium senile (Linnaeus, 1761)		X				X			
Microdeutopus anomalus (Rathke, 1843)		X			X	X	X	X	X
Microdeutopus gryllotalpa Costa, 1853	X	X	X	X	X	X	X	X	X
Microdeutopus sp. Costa, 1853	X		X	X			X	X	
Microphthalmus aberrans (Webser & Benedict, 1887)		X			X		X		
Microphthalmus sczelkowii Metschnikow, 1865		X					X		
Modiolarca subpicta (Cantraine, 1835)		X			X	X	X	X	X
Modiolus barbatus (Linnaeus, 1758)		X				X			
Modiolus modiolus (Linnaeus, 1758)									X
Molgula manhattensis (De Kay, 1843)		X			X	X			X
Monophorus perversus (Linné, 1758)						X	X		X
Monopseudocuma gilsoni (Gilson,									X

Species name/Taxa	Ris	Arc	Bat	Cer	Cor	Den	Gam	Myt	Tan
1906)									
Musculus discors (Linnaeus, 1767)		X			X	X	X		X
Musculus niger (Gray J.E., 1824)		X			X	X	X		X
Mya arenaria Linnaeus, 1758	X	X	X	X	X	X	X	X	X
Mya truncata Linnaeus, 1758		X			X	X	X		X
Myrianida prolifera (O.F. Müller, 1788)							X		
Myrianida sp. Milne Edwards, 1845		X				X			
Myriochele oculata Zachs, 1922		X				X			X
Mysidacea Haworth, 1825							X	X	
Mysidae Dana, 1850								X	
Mysis mixta Lilljeborg, 1852		X				X			
Mytilus edulis Linnaeus, 1758	X	X	X	X	X	X	X	X	X
Nassarius reticulatus (Linnaeus, 1758)		X		X	X	X			
Nebalia bipes (O. Fabricius, 1780)		X				X			
Nemertina	X	X	X	X	X	X	X	X	X
Neoamphitrite figulus (Dalyell, 1853)		X			X	X	X	X	X
Neomysis integer (Leach, 1814)		X			X			X	
Nephtys caeca (Fabricius, 1780)	X	X	X	X	X	X	X	X	X
Nephtys ciliata (Müller, 1776)		X		X	X	X	X	X	
Nephtys hombergii Savigny in Lamarck, 1818		X		X	X	X	X	X	
Nephtys longosetosa Örsted, 1843		X					X		X
Nephtys pente Rainer, 1984		X			X	X			
Nephtys sp. Cuvier, 1817		X				X	X		
Neptunea antiqua (Linnaeus, 1758)		X				X			X
Nereididae Johnston, 1865	X		X	X		X	X	X	
Nereimyra punctata (Müller, 1788)		X			X	X	X		X
Nereis pelagica Linnaeus, 1758		X			X	X	X	X	X
Nicolea zostericola Örsted, 1844		X			X	X	X		X
Nicomache lumbricalis (Fabricius, 1780)		X							
Nicomache minor Arwidsson, 1906		X				X			
Nicomache personata Johnson, 1901		X				X			
Nucula nitidosa Winckworth, 1930		X							
Nymphon brevirostre Hodge, 1863		X			X	X	X		X
Odostomia scalaris MacGillivray, 1843		X		X	X	X	X	X	X
Odostomia sp. Fleming, 1813								X	
Oligochaeta	X	X	X	X		X	X	X	
Onchidoris muricata (Müller O.F., 1776)		X			X	X	X	X	X
Onoba semicostata (Montagu, 1803)		X			X	X	X	X	X
Opercularella lacerata (Johnston, 1847)		X			X	X	X	X	X
Ophelia limacina (Rathke, 1843)		X			X	X	X		X
Ophelia rathkei McIntosh, 1908			X	X	X	X	X	X	X
Ophiopholis aculeata (Linnaeus, 1767)		X							
Ophiura albida Forbes, 1839		X			X	X	X	X	X
Ophiura ophiura (Linnaeus, 1758)		X							
Owenia fusiformis Delle Chiaje, 1844		X							
Pagurus bernhardus (Linnaeus, 1758)		X				X			
Palaemon adspersus Rathke, 1837			X			X	X	X	
Palaemon elegans Rathke, 1837					X	X	X	X	
Pandalus montagui Leach, 1814 in						X			

Species name/Taxa	Ris	Arc	Bat	Cer	Cor	Den	Gam	Myt	Tan
Leach, 1813-1814									
Paraonis fulgens (Levinsen, 1884)		X	X	X	X	X	X		
Pariambus typicus (Krøyer, 1884)		X		X		X	X		X
Parvicardium hauniense (Høpner Petersen & Russell, 1971)	X			X			X	X	
Parvicardium ovale (Sowerby G.B. II, 1840)		X	X	X	X	X	X	X	X
Parvicardium scabrum (Philippi, 1844)		X			X	X	X	X	X
Parvicardium sp. Monterosato, 1884							X	X	
Petaloproctus borealis Ardwisson, 1906		X							
Phaxas pellucidus (Pennant, 1777)		X		X	X	X	X		X
Pherusa plumosa (Müller, 1776)		X			X	X		X	
Philine aperta (Linnaeus, 1767)		X			X	X	X		X
Pholoe assimilis Örsted, 1845		X			X	X	X	X	X
Pholoe baltica Oersted, 1843		X			X	X	X	X	X
Pholoe inornata Johnston, 1839		X				X	X		X
Pholoe sp. Johnston, 1839						X			
Phoronis sp.		X			X	X	X	X	X
Phoxocephalus holbolli (Kroyer, 1842)		X				X	X	X	X
Phtisica marina Slabber, 1769		X			X	X	X	X	X
Phyllodoce groenlandica Oersted, 1842		X			X	X		X	
Phyllodoce lineata (Claparède, 1870)		X							
Phyllodoce maculata (Linnaeus, 1767)		X			X	X	X	X	
Phyllodocidae							X		
Pisione remota (Southern, 1914)									X
Platynereis dumerilii (Audouin & Milne Edwards, 1833)	X		X	X		X	X	X	X
Pleurogonium rubicundum (G. O. Sars, 1864)		X				X			
Pododesmus patelliformis (Linnaeus, 1761)						X			
Polycirrus medusa Grube, 1850		X			X	X	X	X	X
Polycirrus sp. Grube, 1850		X					X		
Polydora caeca (Örsted, 1843)		X				X			X
Polydora ciliata (Johnston, 1838)		X			X	X	X	X	
Polydora cornuta Bosc, 1802	X	X	X	X	X	X	X	X	X
Polydora sp. Bosc, 1802	X			X			X	X	
Polygordius lacteus Schneider, 1868									X
Polynoidae Malmgren, 1867				X					
Pomatoceros triqueter (Linnaeus, 1758)						X			
Pontoporeia femorata Krøyer, 1842		X			X				
Porifera Grant, 1836						X	X		
Potamopyrgus antipodarum (J.E. Gray, 1843)			X						
Praunus flexuosus (Müller, 1776)		X				X	X	X	
Praunus inermis (Rathke, 1843)		X				X	X	X	X
Priapulus caudatus Lamarck, 1816		X			X	X	X	X	
Prionospio steenstrupi Malmgren, 1867		X				X			
Protodorvillea kefersteini (McIntosh, 1869)		X							
Protomedeia fasciata Krøyer, 1842		X			X	X		X	X
Psammechinus miliaris (P.L.S. Müller,		X				X			X

Species name/Taxa	Ris	Arc	Bat	Cer	Cor	Den	Gam	Myt	Tan
1771)									
Pseudocuma longicorne (Bate, 1858)				X					
Pseudopolydora pulchra (Carazzi, 1895)		X			X	X			
Pusillina inconspicua (Alder, 1844)		X	X	X	X	X	X	X	X
Pusillina sarsii (Lovén, 1846)	X		X	X			X	X	
Pycnogonum litorale (Strom, 1762)		X				X			
Pygospio elegans Claparède, 1863	X	X	X	X	X	X	X	X	X
Radix balthica (Linnaeus, 1758)	X								
Retusa obtusa (Montagu, 1803)	X	X		X	X	X		X	
Retusa truncatula (Bruguière, 1792)	X	X	X	X	X	X	X	X	X
Rhithropanopeus harrisii (Gould, 1841)								X	
Rhodine gracilior Tauber, 1879		X				X			
Rhodine loveni Malmgren, 1865		X				X			
Rissoa membranacea (Adams J., 1800)				X		X	X	X	
Rissoa sp. Freminville in Desmarest, 1814	X						X	X	
Sabellidae Malmgren, 1867								X	
Sagartia sp. Gosse, 1855		X			X	X		X	X
Sarsia tubulosa (M. Sars, 1835)		X			X				
Scalibregma inflatum Rathke, 1843		X			X	X			X
Scolelepis foliosa (Audouin & Milne Edwards, 1833)		X			X	X	X		X
Scolelepis squamata (O.F. Muller, 1806)						X			
Scoloplos armiger (Müller, 1776)	X	X	X	X	X	X	X	X	X
Sertularella rugosa (Linnaeus, 1758)						X			
Sertularia cupressina Linnaeus, 1758		X			X	X	X	X	X
Sphaerodoropsis baltica (Reimers, 1933)						X	X	X	
Sphaerosyllis hystrix Claparède, 1863		X			X	X			X
Spio armata (Thulin, 1957)		X				X			
Spio filicornis (Müller, 1776)		X		X	X	X	X		X
Spio goniocephala Thulin, 1957		X	X	X	X	X	X	X	X
Spio martinensis Mesnil, 1896		X	X	X	X	X	X		X
Spio sp. Fabricius, 1785				X			X		
Spionidae Grube, 1850			X	X					
Spiophanes bombyx (Claparède, 1870)		X							
Spirorbis corallinae de Silva, Knight-Jones, 1962		X			X	X	X	X	X
Spirorbis spirorbis (Linnaeus, 1758)						X	X		
Spisula subtruncata (da Costa, 1778)		X		X	X	X	X		X
Stenothoe monoculoides (Montagu, 1815)		X					X		
Stenula rubrovittata Sars, 1883						X		X	
Streblospio shrubsoli (Buchanan, 1890)	X			X				X	
Streptosyllis websteri Southern, 1914		X		X	X	X	X	X	X
Tanaissus lilljeborgi (Stebbing, 1891)		X			X	X	X	X	X
Tellimya ferruginosa (Montagu, 1808)					X				
Tellina fabula Gmelin, 1791		X							
Tellina tenuis da Costa, 1778				X		X	X		
Tenellia adspersa (Nordmann, 1845)						X			
Terebellidae Mamlgren, 1867		X				X	X		

Species name/Taxa	Ris	Arc	Bat	Cer	Cor	Den	Gam	Myt	Tan
Terebellides stroemi Sars, 1835		X		X	X	X	X	X	
Theodoxus fluviatilis (Linnaeus, 1758)	X			X					
Thracia papyracea (Poli, 1791)		X				X	X		X
Thracia pubescens (Pulteney, 1799)						X			
Travisia forbesii Johnston, 1840		X	X	X	X	X	X	X	X
Trochochaeta multisetosa (Örsted, 1844)		X			X	X	X		X
Tubifex costatus (Claparède, 1863)		X				X			
Tubificidae		X			X	X	X	X	X
Tubificoides benedii (Udekem, 1855)	X	X	X	X	X	X	X	X	X
Tubulanus polymorphus Renier, 1804		X			X	X	X	X	X
Tubularia sp.		X							
Turbellaria		X			X	X	X	X	X
Turbonillinae						X			
Unciola planipes Norman, 1867		X				X			
Urticina felina (Linnaeus, 1761)		X			X	X	X	X	
Velutina velutina (Müller O.F., 1776)		X				X			
Vitreolina philippi (de Rayneval & Ponzi, 1854)		X							
Walkeria uva (Linnaeus, 1758)		X			X	X			

A P P E N D I X 3

List of all stations

Tab.App.3- 1 *List of all benthic fauna stations sampled during the baseline investigation in 2009 and 2010 with coordinates and sampling dates. The reference system of the positions is WGS84.*

Station ID	Latitude	Longitude	Dates of sampling
FB001	54° 30,71	11° 14,54	05-May-09; 11-Sep-09; 18-Apr-10; 05-Sep-10
FB002	54° 31,67	11° 15,23	05-May-09; 11-Sep-09; 18-Apr-10; 05-Sep-10
FB003	54° 32,60	11° 16,04	05-May-09; 11-Sep-09; 18-Apr-10; 05-Sep-10
FB004	54° 33,64	11° 16,76	05-May-09; 11-Sep-09; 18-Apr-10; 05-Sep-10
FB005	54° 34,73	11° 17,57	07-May-09; 11-Sep-09; 18-Apr-10; 05-Sep-10
FB006	54° 35,51	11° 18,21	07-May-09; 11-Sep-09; 20-Apr-10; 05-Sep-10
FB007	54° 36,65	11° 19,05	07-May-09; 11-Sep-09; 17-Apr-10; 05-Sep-10
FB008	54° 37,65	11° 19,77	07-May-09; 11-Sep-09; 17-Apr-10; 05-Sep-10
FB009	54° 43,97	10° 44,93	10-May-09; 10-Sep-09; 20-Apr-10; 09-Sep-10
FB010	54° 43,73	10° 45,97	10-May-09; 10-Sep-09
FB011	54° 44,21	10° 46,61	10-May-09; 10-Sep-09
FB012	54° 44,45	10° 47,71	10-May-09; 10-Sep-09; 20-Apr-10; 07-Sep-10
FB013	54° 45,13	10° 50,16	10-May-09; 10-Sep-09; 20-Apr-10; 07-Sep-10
FB014	54° 45,46	10° 51,61	10-May-09; 10-Sep-09; 20-Apr-10; 07-Sep-10
FB015	54° 45,78	10° 52,79	10-May-09; 10-Sep-09; 20-Apr-10; 07-Sep-10
FB016	54° 43,72	10° 46,99	10-May-09; 10-Sep-09; 20-Apr-10; 09-Sep-10
FB017	54° 31,81	11° 12,73	08-May-09; 06-Sep-09; 20-Apr-10; 05-Sep-10
FB018	54° 32,98	11° 13,62	08-May-09; 06-Sep-09; 20-Apr-10; 05-Sep-10
FB019	54° 34,42	11° 14,77	08-May-09; 06-Sep-09; 20-Apr-10; 05-Sep-10
FB020	54° 35,67	11° 15,68	08-May-09; 06-Sep-09; 20-Apr-10; 05-Sep-10
FB021	54° 36,98	11° 16,71	08-May-09; 06-Sep-09; 20-Apr-10; 05-Sep-10
FB022	54° 38,23	11° 17,66	07-May-09; 06-Sep-09; 20-Apr-10; 05-Sep-10
FB023	54° 29,63	11° 17,35	05-May-09; 08-Sep-09; 18-Apr-10; 06-Sep-10
FB024	54° 31,42	11° 18,85	05-May-09; 08-Sep-09; 17-Apr-10; 06-Sep-10
FB025	54° 32,52	11° 18,63	03-May-09; 10-Sep-09; 17-Apr-10; 05-Sep-10
FB026	54° 34,34	11° 19,94	03-May-09; 08-Sep-09; 17-Apr-10; 05-Sep-10
FB027	54° 35,54	11° 20,80	03-May-09; 08-Sep-09; 17-Apr-10; 05-Sep-10
FB028	54° 36,27	11° 21,36	03-May-09; 10-Sep-09; 17-Apr-10; 04-Sep-10
FB029	54° 28,51	11° 24,66	07-May-09; 08-Sep-09; 17-Apr-10; 04-Sep-10
FB030	54° 31,07	11° 26,47	04-May-09; 08-Sep-09; 17-Apr-10; 04-Sep-10
FB031	54° 33,03	11° 27,28	04-May-09; 08-Sep-09; 17-Apr-10; 04-Sep-10
FB032	54° 33,11	11° 28,31	04-May-09; 08-Sep-09; 17-Apr-10; 04-Sep-10
FB033	54° 25,49	11° 34,70	07-May-09; 07-Sep-09; 18-Apr-10; 04-Sep-10
FB034	54° 27,64	11° 33,84	07-May-09; 07-Sep-09; 18-Apr-10; 04-Sep-10
FB035	54° 28,13	11° 35,87	07-May-09; 07-Sep-09; 18-Apr-10; 04-Sep-10
FB036	54° 29,08	11° 33,98	07-May-09; 07-Sep-09; 18-Apr-10; 04-Sep-10
FB037	54° 30,80	11° 34,26	07-May-09; 07-Sep-09; 18-Apr-10; 04-Sep-10
FB038	54° 30,16	11° 34,37	07-May-09; 07-Sep-09; 18-Apr-10; 04-Sep-10
FB039	54° 30,17	11° 35,62	07-May-09; 07-Sep-09; 18-Apr-10; 04-Sep-10
FB040	54° 34,52	11° 05,02	08-May-09; 08-Sep-09; 19-Apr-10; 06-Sep-10

Station ID	Latitude	Longitude	Dates of sampling
FB041	54° 36,04	11° 06,90	08-May-09; 08-Sep-09; 19-Apr-10; 06-Sep-10
FB042	54° 36,87	11° 07,51	08-May-09; 08-Sep-09; 19-Apr-10; 06-Sep-10
FB043	54° 37,97	11° 08,37	08-May-09; 08-Sep-09; 19-Apr-10; 06-Sep-10
FB044	54° 36,64	10° 49,85	09-May-09; 09-Sep-09
FB045	54° 37,45	10° 51,04	09-May-09; 09-Sep-09; 19-Apr-10; 07-Sep-10
FB046	54° 38,23	10° 52,12	09-May-09; 09-Sep-09; 19-Apr-10; 07-Sep-10
FB047	54° 39,02	10° 53,09	09-May-09; 09-Sep-09; 19-Apr-10; 09-Sep-10
FB048	54° 39,75	10° 53,97	09-May-09; 09-Sep-09
FB049	54° 40,46	10° 54,69	09-May-09; 09-Sep-09; 20-Apr-10; 09-Sep-10
FB050	54° 41,24	10° 55,57	10-May-09; 09-Sep-09; 20-Apr-10; 09-Sep-10
FB051	54° 34,56	11° 02,96	08-May-09; 08-Sep-09; 19-Apr-10; 06-Sep-10
FB052	54° 34,81	11° 02,29	08-May-09; 08-Sep-09; 19-Apr-10; 06-Sep-10
FB053	54° 34,92	11° 01,24	08-May-09; 08-Sep-09; 19-Apr-10; 06-Sep-10
FB054	54° 37,28	10° 59,99	09-May-09; 09-Sep-09; 19-Apr-10; 06-Sep-10
FB055	54° 38,02	11° 00,64	09-May-09; 09-Sep-09; 19-Apr-10; 06-Sep-10
FB056	54° 37,48	11° 01,49	09-May-09; 09-Sep-09; 19-Apr-10; 06-Sep-10
FB057	54° 34,48	10° 58,17	09-May-09; 09-Sep-09; 19-Apr-10; 06-Sep-10
FB058	54° 35,08	10° 54,52	09-May-09; 09-Sep-09; 19-Apr-10; 06-Sep-10
FB059	54° 33,96	10° 52,04	09-May-09; 09-Sep-09; 19-Apr-10; 06-Sep-10
FB060	54° 27,06	11° 32,24	18-Apr-10; 04-Sep-10
FB061	54° 26,10	11° 33,41	18-Apr-10; 04-Sep-10
FB062	54° 24,25	11° 30,50	18-Apr-10; 04-Sep-10
FB063	54° 27,14	11° 24,42	17-Apr-10; 04-Sep-10
Fe-00-01	54° 29,89	11° 14,23	09-May-09; 17-Sep-09; 02-May-10; 03-Sep-10
Fe-00-02	54° 30,11	11° 14,55	09-May-09; 17-Sep-09; 02-May-10; 03-Sep-10
Fe-00-03	54° 30,34	11° 14,81	09-May-09; 17-Sep-09; 02-May-10
Fe-E01-01	54° 29,52	11° 14,64	09-May-09; 17-Sep-09; 02-May-10; 03-Sep-10
Fe-E01-02	54° 29,70	11° 15,08	09-May-09; 17-Sep-09; 02-May-10; 03-Sep-10
Fe-E01-03	54° 29,89	11° 15,49	09-May-09; 17-Sep-09; 02-May-10; 03-Sep-10
Fe-E02-01	54° 28,82	11° 15,02	09-May-09; 17-Sep-09; 02-May-10; 03-Sep-10
Fe-E02-02	54° 28,96	11° 15,60	09-May-09; 17-Sep-09; 02-May-10; 03-Sep-10
Fe-E02-03	54° 29,19	11° 16,51	09-May-09; 17-Sep-09; 02-May-10; 03-Sep-10
Fe-E03-01	54° 28,06	11° 15,87	09-May-09; 17-Sep-09; 02-May-10; 03-Sep-10
Fe-E03-02	54° 28,13	11° 16,22	09-May-09; 17-Sep-09; 01-May-10; 03-Sep-10
Fe-E03-03	54° 28,27	11° 16,69	09-May-09; 17-Sep-09; 02-May-10; 03-Sep-10
Fe-E04-01	54° 27,11	11° 16,67	09-May-09; 17-Sep-09; 01-May-10; 03-Sep-10
Fe-E04-02	54° 27,16	11° 16,89	09-May-09; 17-Sep-09; 01-May-10; 03-Sep-10
Fe-E04-03	54° 27,27	11° 17,27	09-May-09; 17-Sep-09; 01-May-10; 03-Sep-10
Fe-E05-01	54° 25,99	11° 17,88	09-May-09; 17-Sep-09; 01-May-10; 03-Sep-10
Fe-E05-02	54° 26,05	11° 18,11	09-May-09; 17-Sep-09; 01-May-10; 03-Sep-10
Fe-E05-03	54° 26,15	11° 18,41	09-May-09; 17-Sep-09; 01-May-10; 03-Sep-10
Fe-M-E08_01	54° 23,99	11° 18,32	12-Nov-09; 24-Mar-10; 01-May-10; 27-May-10
Fe-M-E08_02	54° 23,84	11° 18,50	12-Nov-09; 24-Mar-10; 01-May-10; 27-May-10
Fe-M-W06_01	54° 31,25	11° 01,04	11-Nov-09; 25-Mar-10; 02-May-10; 26-May-10
Fe-M-W06_02	54° 33,18	10° 59,54	11-Nov-09; 25-Mar-10; 02-May-10; 26-May-10

Station ID	Latitude	Longitude	Dates of sampling
Fe-S-E03_01	54° 27,15	11° 16,82	21-Jun-09; 28-Jun-10
Fe-S-E03_02	54° 27,17	11° 16,88	21-Jun-09; 28-Jun-10
Fe-S-E03_03	54° 27,23	11° 17,14	21-Jun-09; 28-Jun-10
Fe-S-E04_01	54° 25,60	11° 17,99	21-Jun-09; 28-Jun-10
Fe-S-E04_02	54° 25,61	11° 18,11	21-Jun-09; 28-Jun-10
Fe-S-E04_03	54° 25,76	11° 18,62	21-Jun-09; 28-Jun-10
Fe-S-E05_01	54° 25,13	11° 18,30	21-Jun-09; 28-Jun-10
Fe-S-E05_02	54° 25,15	11° 18,49	21-Jun-09; 28-Jun-10
Fe-S-E05_03	54° 25,17	11° 18,83	21-Jun-09; 28-Jun-10
Fe-S-E06_01	54° 24,56	11° 18,81	22-Jun-09; 28-Jun-10
Fe-S-E06_02	54° 24,55	11° 19,12	22-Jun-09; 29-Jun-10
Fe-S-E06_03	54° 24,54	11° 19,51	22-Jun-09; 29-Jun-10
Fe-S-E07_01	54° 24,19	11° 18,91	22-Jun-09; 29-Jun-10
Fe-S-E07_02	54° 24,14	11° 19,09	22-Jun-09; 29-Jun-10
Fe-S-E07_03	54° 23,99	11° 19,52	22-Jun-09; 29-Jun-10
Fe-S-E08_01	54° 24,11	11° 18,27	22-Jun-09; 29-Jun-10
Fe-S-E08_02	54° 23,99	11° 18,33	22-Jun-09; 29-Jun-10
Fe-S-E08_03	54° 23,84	11° 18,46	22-Jun-09; 29-Jun-10
Fe-S-E09_01	54° 24,17	11° 17,70	23-Jun-09; 29-Jun-10
Fe-S-E09_02	54° 24,06	11° 17,73	23-Jun-09; 29-Jun-10
Fe-S-E09_03	54° 23,78	11° 17,80	23-Jun-09; 29-Jun-10
Fe-W01-01	54° 30,47	11° 13,28	03-May-09; 20-Sep-09; 09-May-10; 04-Sep-10
Fe-W01-02	54° 30,61	11° 13,36	03-May-09; 20-Sep-09; 09-May-10; 04-Sep-10
Fe-W01-03	54° 30,94	11° 13,56	03-May-09; 20-Sep-09; 09-May-10; 04-Sep-10
Fe-W02-01	54° 30,46	11° 12,75	03-May-09; 20-Sep-09; 09-May-10; 04-Sep-10
Fe-W02-02	54° 30,80	11° 13,02	03-May-09; 20-Sep-09; 09-May-10; 04-Sep-10
Fe-W02-03	54° 31,09	11° 13,21	03-May-09; 20-Sep-09; 09-May-10; 04-Sep-10
Fe-W03-01	54° 30,85	11° 12,44	03-May-09; 16-Sep-09; 09-May-10; 04-Sep-10
Fe-W03-02	54° 31,13	11° 12,65	03-May-09; 16-Sep-09; 09-May-10; 04-Sep-10
Fe-W03-03	54° 31,29	11° 12,78	03-May-09; 16-Sep-09; 09-May-10; 04-Sep-10
Fe-W04-01	54° 31,40	11° 10,64	03-May-09; 16-Sep-09; 09-May-10; 04-Sep-10
Fe-W04-02	54° 31,63	11° 10,91	03-May-09; 16-Sep-09; 09-May-10; 04-Sep-10
Fe-W04-03	54° 32,18	11° 11,33	03-May-09; 16-Sep-09; 09-May-10; 04-Sep-10
Fe-W05-01	54° 31,61	11° 08,31	02-May-09; 16-Sep-09; 09-May-10; 05-Sep-10
Fe-W05-02	54° 31,90	11° 08,32	02-May-09; 16-Sep-09; 09-May-10; 05-Sep-10
Fe-W05-03	54° 32,89	11° 08,36	02-May-09; 16-Sep-09; 09-May-10; 05-Sep-10
Fe-W06-01	54° 31,89	11° 06,01	02-May-09; 16-Sep-09; 09-May-10; 05-Sep-10
Fe-W06-02	54° 32,17	11° 06,05	02-May-09; 16-Sep-09; 09-May-10; 05-Sep-10
Fe-W06-03	54° 33,09	11° 06,19	02-May-09; 16-Sep-09; 09-May-10; 05-Sep-10
Fe-W07-01	54° 32,03	11° 03,59	02-May-09; 16-Sep-09; 08-May-10; 05-Sep-10
Fe-W07-02	54° 32,15	11° 03,41	02-May-09; 16-Sep-09; 08-May-10; 05-Sep-10
Fe-W07-03	54° 33,07	11° 02,28	02-May-09; 16-Sep-09; 08-May-10; 05-Sep-10
Fe-W08-01	54° 29,81	11° 01,09	02-May-09; 18-Sep-09; 03-May-10; 05-Sep-10
Fe-W08-02	54° 30,33	10° 59,74	02-May-09; 18-Sep-09; 08-May-10; 05-Sep-10

Station ID	Latitude	Longitude	Dates of sampling
Fe-W08-03	54° 31,00	10° 57,78	02-May-09; 18-Sep-09; 08-May-10; 05-Sep-10
FeR-E06-01	54° 19,45	11° 04,57	05-May-09; 21-Sep-09; 05-May-10; 01-Sep-10
FeR-E06-02	54° 19,48	11° 04,96	05-May-09; 21-Sep-09; 05-May-10; 01-Sep-10
FeR-E06-03	54° 19,54	11° 05,65	07-May-09; 21-Sep-09; 05-May-10; 01-Sep-10
FeR-E07-01	54° 18,74	11° 04,64	05-May-09; 21-Sep-09; 04-May-10; 01-Sep-10
FeR-E07-02	54° 18,73	11° 05,12	05-May-09; 21-Sep-09; 05-May-10; 01-Sep-10
FeR-E07-03	54° 18,73	11° 05,78	07-May-09; 21-Sep-09; 05-May-10; 01-Sep-10
FeR-E08-01	54° 18,01	11° 04,78	05-May-09; 21-Sep-09; 04-May-10; 02-Sep-10
FeR-E08-02	54° 18,02	11° 05,21	05-May-09; 21-Sep-09; 04-May-10; 02-Sep-10
FeR-E08-03	54° 18,08	11° 05,94	07-May-09; 21-Sep-09; 05-May-10; 01-Sep-10
FeR-E09-01	54° 17,27	11° 05,00	05-May-09; 21-Sep-09; 04-May-10; 02-Sep-10
FeR-E09-02	54° 17,35	11° 05,75	05-May-09; 21-Sep-09; 04-May-10; 01-Sep-10
FeR-E09-03	54° 17,45	11° 06,88	07-May-09; 21-Sep-09; 05-May-10; 01-Sep-10
FeR-E10-01	54° 16,51	11° 05,14	05-May-09; 21-Sep-09; 04-May-10; 02-Sep-10
FeR-E10-02	54° 16,45	11° 06,11	05-May-09; 21-Sep-09; 04-May-10; 02-Sep-10
FeR-E10-03	54° 16,43	11° 07,09	07-May-09; 21-Sep-09; 04-May-10; 02-Sep-10
FeR-E11-01	54° 15,75	11° 05,10	05-May-09; 21-Sep-09; 04-May-10; 02-Sep-10
FeR-E11-02	54° 15,71	11° 05,52	05-May-09; 21-Sep-09; 04-May-10; 02-Sep-10
FeR-E11-03	54° 15,63	11° 06,78	07-May-09; 21-Sep-09; 04-May-10; 02-Sep-10
FeR-E12-01	54° 14,71	11° 05,12	05-May-09; 21-Sep-09; 04-May-10; 02-Sep-10
FeR-E12-02	54° 14,70	11° 05,25	05-May-09; 21-Sep-09; 04-May-10; 02-Sep-10
FeR-E12-03	54° 14,69	11° 06,20	07-May-09; 21-Sep-09; 04-May-10; 02-Sep-10
FeR-W09-01	54° 27,47	11° 00,26	10-May-09; 18-Sep-09; 03-May-10; 05-Sep-10
FeR-W09-02	54° 27,77	10° 58,78	03-May-09; 18-Sep-09; 03-May-10; 05-Sep-10
FeR-W09-03	54° 28,49	10° 55,73	01-May-09; 18-Sep-09; 08-May-10; 05-Sep-10
FeR-W10-01	54° 27,10	11° 00,13	10-May-09; 18-Sep-09; 03-May-10; 05-Sep-10
FeR-W10-02	54° 27,31	10° 57,80	03-May-09; 18-Sep-09; 08-May-10; 05-Sep-10
FeR-W10-03	54° 27,58	10° 54,67	01-May-09; 18-Sep-09; 08-May-10; 05-Sep-10
FeR-W11-01	54° 26,74	11° 00,09	10-May-09; 18-Sep-09; 03-May-10; 06-Sep-10
FeR-W11-02	54° 26,75	10° 57,52	03-May-09; 18-Sep-09; 08-May-10; 05-Sep-10
FeR-W11-03	54° 26,74	10° 53,63	01-May-09; 18-Sep-09; 08-May-10; 05-Sep-10
FeR-W12-01	54° 26,41	11° 00,48	10-May-09; 18-Sep-09; 03-May-10; 06-Sep-10
FeR-W12-02	54° 25,91	10° 58,31	10-May-09; 18-Sep-09; 10-May-10; 06-Sep-10
FeR-W12-03	54° 25,72	10° 56,94	01-May-09; 18-Sep-09; 10-May-10; 06-Sep-10
FeR-W13-01	54° 26,27	11° 00,94	10-May-09; 18-Sep-09; 03-May-10; 06-Sep-10
FeR-W13-02	54° 25,77	10° 59,32	10-May-09; 18-Sep-09; 10-May-10; 06-Sep-10
FeR-W13-03	54° 25,49	10° 58,07	01-May-09; 18-Sep-09; 10-May-10; 06-Sep-10
FeR-W14-01	54° 26,09	11° 01,18	10-May-09; 20-Sep-09; 03-May-10; 06-Sep-10
FeR-W14-02	54° 25,73	11° 00,50	10-May-09; 18-Sep-09; 03-May-10; 06-Sep-10
FeR-W14-03	54° 25,33	10° 59,50	01-May-09; 18-Sep-09; 10-May-10; 06-Sep-10
FeR-W15-01	54° 25,94	11° 01,52	10-May-09; 20-Sep-09; 03-May-10; 06-Sep-10
FeR-W15-02	54° 25,60	11° 01,06	08-May-09; 20-Sep-09; 03-May-10; 06-Sep-10
FeR-W15-03	54° 24,62	11° 00,00	01-May-09; 18-Sep-09; 10-May-10; 06-Sep-10
HB10	54° 32,01	10° 49,47	28-Apr-09; 21-Sep-09; 09-May-10; 05-Sep-10
HB12	54° 31,96	10° 52,90	28-Apr-09; 21-Sep-09; 09-May-10; 05-Sep-10

Station ID	Latitude	Longitude	Dates of sampling
HB17	54° 31,01	10° 49,42	28-Apr-09; 21-Sep-09; 09-May-10; 05-Sep-10
HB19	54° 30,96	10° 52,85	28-Apr-09; 21-Sep-09; 09-May-10; 05-Sep-10
HB27	54° 30,01	10° 49,38	28-Apr-09; 21-Sep-09; 09-May-10; 05-Sep-10
HB29	54° 29,96	10° 52,81	28-Apr-09; 21-Sep-09; 09-May-10; 05-Sep-10
HB38	54° 29,02	10° 49,34	28-Apr-09; 21-Sep-09; 09-May-10; 05-Sep-10
HB40	54° 28,96	10° 52,76	28-Apr-09; 21-Sep-09; 09-May-10; 05-Sep-10
LO-00-01	54° 38,81	11° 21,73	25-May-09; 06-Aug-09; 13-Oct-09; 19-Apr-10; 08-Oct-10
LO-00-02	54° 38,48	11° 21,58	25-May-09; 27-Jul-09; 13-Oct-09; 26-Apr-10; 24-Sep-10
LO-00-03	54° 37,82	11° 20,97	02-Jun-09; 13-Oct-09; 26-Apr-10; 24-Sep-10
LO-E01-01	54° 38,53	11° 22,64	25-May-09; 14-Oct-09; 19-Apr-10; 08-Oct-10
LO-E01-02	54° 38,20	11° 22,46	25-May-09; 14-Oct-09; 26-Apr-10; 24-Sep-10
LO-E01-03	54° 37,46	11° 21,74	02-Jun-09; 15-Oct-09; 26-Apr-10; 24-Sep-10
LO-E02-01	54° 38,26	11° 23,59	25-May-09; 06-Aug-09; 14-Oct-09; 19-Apr-10; 08-Oct-10
LO-E02-02	54° 37,64	11° 34,01	25-May-09; 29-Jul-09; 14-Oct-09; 26-Apr-10; 24-Sep-10
LO-E02-03	54° 37,00	11° 22,39	02-Jun-09; 15-Oct-09; 26-Apr-10; 24-Sep-10
LO-E03-01	54° 37,94	11° 24,32	25-May-09; 06-Aug-09; 15-Oct-09; 19-Apr-10; 08-Oct-10
LO-E03-02	54° 37,39	11° 23,73	25-May-09; 29-Jul-09; 14-Oct-09; 26-Apr-10; 24-Sep-10
LO-E03-03	54° 36,60	11° 23,10	02-Jun-09; 15-Oct-09; 26-Apr-10; 24-Sep-10
LO-E04-01	54° 37,64	11° 25,05	25-May-09; 29-Jul-09; 14-Oct-09; 19-Apr-10; 08-Oct-10
LO-E04-02	54° 37,02	11° 24,61	25-May-09; 29-Jul-09; 14-Oct-09; 26-Apr-10; 08-Oct-10
LO-E04-03	54° 36,39	11° 24,05	02-Jun-09; 15-Oct-09; 26-Apr-10; 21-Sep-10
LO-E05-01	54° 36,89	11° 26,53	25-May-09; 15-Oct-09; 19-Apr-10; 08-Oct-10
LO-E05-02	54° 36,44	11° 26,20	25-May-09; 15-Oct-09; 26-Apr-10; 08-Oct-10
LO-E05-03	54° 35,55	11° 25,41	03-Jul-09; 15-Oct-09; 26-Apr-10; 21-Sep-10
LO-E06-01	54° 36,29	11° 28,07	25-May-09; 15-Oct-09; 19-Apr-10; 08-Oct-10
LO-E06-02	54° 35,74	11° 27,78	25-May-09; 15-Oct-09; 26-Apr-10; 08-Oct-10
LO-E06-03	54° 34,75	11° 26,90	03-Jul-09; 15-Oct-09; 26-Apr-10; 21-Sep-10
LO-W01-01	54° 39,55	11° 20,10	11-May-09; 07-Aug-09; 13-Oct-09; 28-Apr-10; 24-Sep-10
LO-W01-02	54° 39,25	11° 19,75	11-May-09; 23-Jul-09; 13-Oct-09; 27-Apr-10; 24-Sep-10
LO-W01-03	54° 38,65	11° 19,18	11-May-09; 13-Oct-09; 27-Apr-10; 24-Sep-10
LO-W02-01	54° 39,82	11° 19,48	02-Jun-09; 23-Jul-09; 13-Oct-09; 28-Apr-10; 24-Sep-10
LO-W02-02	54° 39,56	11° 19,04	02-Jun-09; 23-Jul-09; 13-Oct-09; 27-Apr-10; 24-Sep-10
LO-W02-03	54° 39,04	11° 18,55	02-Jun-09; 13-Oct-09; 27-Apr-10; 24-Sep-10
LO-W03-01	54° 40,32	11° 18,76	02-Jun-09; 23-Jul-09; 13-Oct-09; 28-Apr-10; 24-Sep-10
LO-W03-02	54° 39,85	11° 18,36	02-Jun-09; 23-Jul-09; 13-Oct-09; 28-Apr-10; 23-Sep-10
LO-W03-03	54° 39,25	11° 17,82	02-Jun-09; 13-Oct-09; 28-Apr-10; 23-Sep-10
LO-W04-01	54° 40,78	11° 18,13	11-May-09; 13-Oct-09; 28-Apr-10; 23-Sep-10
LO-W04-02	54° 40,34	11° 17,75	11-May-09; 13-Oct-09; 04-May-10; 23-Sep-10
LO-W04-03	54° 39,64	11° 17,05	11-May-09; 13-Oct-09; 28-Apr-10; 23-Sep-10
LO-W05-01	54° 41,21	11° 17,50	11-May-09; 18-Sep-09; 28-Apr-10; 23-Sep-10
LO-W05-02	54° 40,84	11° 17,11	11-May-09; 18-Sep-09; 04-May-10; 23-Sep-10
LO-W05-03	54° 40,12	11° 16,52	11-May-09; 18-Sep-09; 04-May-10; 23-Sep-10
LO-W06-01	54° 41,93	11° 16,00	02-Jun-09; 18-Sep-09; 28-Apr-10; 23-Sep-10
LO-W06-02	54° 41,41	11° 15,45	02-Jun-09; 18-Sep-09; 04-May-10; 23-Sep-10

Station ID	Latitude	Longitude	Dates of sampling
LO-W06-03	54° 40,77	11° 14,75	02-Jun-09; 18-Sep-09; 04-May-10; 23-Sep-10
LOR-E07-01	54° 35,00	11° 46,50	02-Jul-09; 30-Jul-09; 15-Oct-09; 15-Apr-10; 13-Sep-10
LOR-E07-02	54° 33,40	11° 46,50	03-Jul-09; 30-Jul-09; 29-Oct-09; 27-Apr-10; 21-Sep-10
LOR-E07-03	54° 31,00	11° 46,50	02-Jul-09; 29-Oct-09; 27-Apr-10; 13-Sep-10
LOR-E08-01	54° 34,60	11° 47,50	02-Jul-09; 27-Oct-09; 15-Apr-10; 13-Sep-10
LOR-E08-02	54° 33,00	11° 47,50	03-Jul-09; 29-Oct-09; 27-Apr-10; 21-Sep-10
LOR-E08-03	54° 30,60	11° 47,50	02-Jul-09; 29-Oct-09; 27-Apr-10; 21-Sep-10
LOR-E09-01	54° 34,20	11° 48,50	02-Jul-09; 27-Oct-09; 15-Apr-10; 13-Sep-10
LOR-E09-02	54° 33,10	11° 48,50	03-Jul-09; 29-Oct-09; 27-Apr-10; 21-Sep-10
LOR-E09-03	54° 31,20	11° 48,50	02-Jul-09; 29-Oct-09; 27-Apr-10; 13-Sep-10
LOR-E10-01	54° 34,00	11° 49,50	02-Jul-09; 27-Oct-09; 15-Apr-10; 21-Sep-10
LOR-E10-02	54° 33,99	11° 49,50	03-Jul-09; 29-Oct-09; 27-Apr-10; 21-Sep-10
LOR-E10-03	54° 30,50	11° 49,50	02-Jul-09; 29-Oct-09; 27-Apr-10; 13-Sep-10
LOR-E11-01	54° 33,40	11° 53,50	02-Jul-09; 27-Oct-09; 15-Apr-10; 13-Sep-10
LOR-E11-02	54° 32,40	11° 53,50	02-Jul-09; 27-Oct-09; 15-Apr-10; 13-Sep-10
LOR-E11-03	54° 31,00	11° 53,50	02-Jul-09; 27-Oct-09; 15-Apr-10; 13-Sep-10
LOR-E12-01	54° 33,50	11° 54,50	02-Jul-09; 27-Oct-09; 15-Apr-10; 13-Sep-10
LOR-E12-02	54° 32,50	11° 54,50	02-Jul-09; 27-Oct-09; 15-Apr-10; 13-Sep-10
LOR-E12-03	54° 31,00	11° 54,50	02-Jul-09; 27-Oct-09; 15-Apr-10; 13-Sep-10
LOR-E13-01	54° 33,50	11° 55,49	02-Jul-09; 27-Oct-09; 15-Apr-10; 13-Sep-10
LOR-E13-02	54° 32,70	11° 55,49	02-Jul-09; 27-Oct-09; 15-Apr-10; 13-Sep-10
LOR-E13-03	54° 31,00	11° 55,50	02-Jul-09; 27-Oct-09; 15-Apr-10; 13-Sep-10
LOR-W07-01	54° 42,56	11° 13,26	02-Jun-09; 22-Jul-09; 18-Sep-09; 28-Apr-10; 23-Sep-10
LOR-W07-02	54° 42,23	11° 13,12	13-May-09; 22-Jul-09; 18-Sep-09; 03-May-10; 23-Sep-10
LOR-W07-03	54° 41,72	11° 12,37	12-May-09; 18-Sep-09; 04-May-10; 22-Sep-10
LOR-W08-01	54° 43,88	11° 07,91	13-May-09; 22-Jul-09; 18-Sep-09; 04-May-10; 23-Sep-10
LOR-W08-02	54° 43,60	11° 07,78	13-May-09; 22-Jul-09; 18-Sep-09; 03-May-10; 23-Sep-10
LOR-W08-03	54° 43,12	11° 07,28	12-May-09; 18-Sep-09; 03-May-10; 22-Sep-10
LOR-W09-01	54° 44,61	11° 04,00	13-May-09; 22-Jul-09; 18-Sep-09; 28-Apr-10; 22-Sep-10
LOR-W09-02	54° 44,25	11° 03,61	13-May-09; 22-Jul-09; 18-Sep-09; 03-May-10; 22-Sep-10
LOR-W09-03	54° 43,09	11° 02,63	12-May-09; 18-Sep-09; 03-May-10; 22-Sep-10
LOR-W10-01	54° 45,19	11° 01,79	13-May-09; 17-Sep-09; 28-Apr-10; 22-Sep-10
LOR-W10-02	54° 44,44	11° 01,20	13-May-09; 17-Sep-09; 03-May-10; 22-Sep-10
LOR-W10-03	54° 43,15	10° 59,96	12-May-09; 17-Sep-09; 03-May-10; 22-Sep-10
LOR-W11-01	54° 45,70	11° 00,16	12-May-09; 17-Sep-09; 29-Apr-10; 22-Sep-10
LOR-W11-02	54° 44,86	10° 59,27	12-May-09; 17-Sep-09; 03-May-10; 22-Sep-10
LOR-W11-03	54° 44,00	10° 58,15	12-May-09; 17-Sep-09; 03-May-10; 22-Sep-10
LOR-W12-01	54° 46,30	10° 59,58	12-May-09; 17-Sep-09; 29-Apr-10; 22-Sep-10
LOR-W12-02	54° 45,76	10° 58,64	12-May-09; 17-Sep-09; 29-Apr-10; 22-Sep-10
LOR-W12-03	54° 44,78	10° 56,62	12-May-09; 17-Sep-09; 03-May-10; 22-Sep-10
LOR-W13-01	54° 46,87	10° 59,09	12-May-09; 17-Sep-09; 29-Apr-10; 22-Sep-10
LOR-W13-02	54° 46,72	10° 58,38	12-May-09; 17-Sep-09; 29-Apr-10; 22-Sep-10

Station ID	Latitude	Longitude	Dates of sampling
LOR-W13-03	54° 45,49	10° 55,10	12-May-09; 17-Sep-09; 29-Apr-10; 22-Sep-10
LOR-W14-01	54° 47,48	10° 58,45	12-May-09; 17-Sep-09; 29-Apr-10; 22-Sep-10
LOR-W14-02	54° 47,48	10° 57,08	12-May-09; 17-Sep-09; 29-Apr-10; 22-Sep-10
LOR-W14-03	54° 47,43	10° 55,30	12-May-09; 17-Sep-09; 29-Apr-10; 22-Sep-10
RO-01-01	54° 37,81	11° 31,50	14-May-09; 20-Oct-09
RO-01-02	54° 36,44	11° 31,55	14-May-09; 20-Oct-09
RO-02-01	54° 38,59	11° 35,00	14-May-09; 20-Oct-09
RO-02-02	54° 37,40	11° 35,51	14-May-09; 20-Oct-09
RO-02-03	54° 36,31	11° 35,00	14-May-09; 20-Oct-09
RO-03-01	54° 39,20	11° 39,01	19-May-09; 21-Oct-09
RO-03-02	54° 37,50	11° 39,00	19-May-09; 21-Oct-09
RO-03-03	54° 35,90	11° 39,01	19-May-09; 21-Oct-09
RO-04-01	54° 38,85	11° 43,00	19-May-09; 21-Oct-09
RO-04-02	54° 37,71	11° 43,01	19-May-09; 21-Oct-09
RO-04-03	54° 36,50	11° 43,00	19-May-09; 21-Oct-09
RO-05-01	54° 38,00	11° 47,00	19-May-09; 27-Oct-09
RO-05-02	54° 37,13	11° 46,99	19-May-09; 27-Oct-09
RO-05-03	54° 35,50	11° 46,99	19-May-09; 15-Oct-09
RO-06-01	54° 38,01	11° 49,00	20-May-09; 15-Oct-09
RO-06-02	54° 38,50	11° 49,00	20-May-09; 15-Oct-09
RO-06-03	54° 35,50	11° 49,01	20-May-09; 15-Oct-09
RO-07-01	54° 39,10	11° 50,98	20-May-09; 15-Oct-09
RO-07-02	54° 37,79	11° 51,00	20-May-09; 15-Oct-09
RO-07-03	54° 39,08	11° 50,94	20-May-09; 15-Oct-09
SB01	54° 17,92	11° 09,57	28-Apr-09; 22-Sep-09
SB02	54° 17,92	11° 10,87	28-Apr-09; 22-Sep-09
SB03	54° 17,92	11° 12,17	28-Apr-09; 22-Sep-09
SB04	54° 17,92	11° 13,21	28-Apr-09; 22-Sep-09
SB05	54° 15,28	11° 09,40	28-Apr-09; 22-Sep-09
SB06	54° 14,77	11° 10,75	28-Apr-09; 22-Sep-09
SB07	54° 14,77	11° 12,10	28-Apr-09; 22-Sep-09
SB08	54° 15,52	11° 13,44	28-Apr-09; 22-Sep-09
Gr-S-E01_01	54° 23,26	11° 08,21	16-Jun-09
Gr-S-E01_02	54° 23,29	11° 08,68	16-Jun-09
Gr-S-E01_03	54° 23,28	11° 08,45	16-Jun-09
Gr-S-E02_02	54° 22,83	11° 08,41	17-Jun-09
Gr-S-E03_01	54° 22,58	11° 07,84	16-Jun-09
Gr-S-E03_02	54° 22,41	11° 08,47	16-Jun-09
Gr-S-E03_03	54° 22,12	11° 09,50	17-Jun-09
Gr-S-E04_01	54° 22,25	11° 07,61	16-Jun-09
Gr-S-E04_02	54° 22,02	11° 08,06	16-Jun-09
Gr-S-E04_03	54° 21,38	11° 09,25	17-Jun-09
Gr-S-E05_01	54° 21,95	11° 07,09	15-Jun-09
Gr-S-E05_02	54° 21,71	11° 07,39	15-Jun-09

Station ID	Latitude	Longitude	Dates of sampling
Gr-S-E05_03	54° 21,30	11° 08,00	15-Jun-09
Gr-S-E06_01	54° 21,08	11° 07,06	15-Jun-09
Gr-S-E06_02	54° 21,47	11° 06,66	15-Jun-09
Gr-S-E06_03	54° 21,32	11° 06,79	15-Jun-09
Gr-S-E07_01	54° 21,33	11° 05,56	15-Jun-09
Gr-S-E07_02	54° 21,17	11° 05,80	15-Jun-09
LA-01-EP1	54° 46,99	10° 45,32	24-Jun-09
LA-01-EP2	54° 46,99	10° 46,04	24-Jun-09
LA-01-EP3	54° 46,99	10° 46,41	24-Jun-09
LA-02-EP1	54° 45,98	10° 44,98	10-Aug-09
LA-02-EP2	54° 45,99	10° 45,20	10-Aug-09
LA-02-EP3	54° 46,00	10° 45,79	10-Aug-09
LA-03-EP1	54° 44,97	10° 44,39	11-Aug-09
LA-03-EP2	54° 45,00	10° 44,79	11-Aug-09
LA-03-EP3	54° 44,99	10° 45,01	10-Aug-09
LA-04-EP1	54° 44,39	10° 44,17	11-Aug-09
LA-04-EP2	54° 44,39	10° 44,38	11-Aug-09
LA-04-EP3	54° 44,39	10° 44,90	11-Aug-09
Sb-S-E01_01	54° 15,52	11° 12,93	01-Jul-09
Sb-S-E01_02	54° 16,25	11° 12,96	01-Jul-09
Sb-S-E01_03	54° 17,36	11° 13,00	01-Jul-09
Sb-S-E02_01	54° 15,55	11° 11,88	30-Jun-09
Sb-S-E02_02	54° 16,25	11° 12,15	30-Jun-09
Sb-S-E02_03	54° 17,36	11° 12,22	30-Jun-09
Sb-S-E03_01	54° 15,44	11° 10,92	30-Jun-09
Sb-S-E03_02	54° 16,25	11° 10,95	30-Jun-09
Sb-S-E03_03	54° 17,37	11° 11,00	30-Jun-09
Sb-S-E04_01	54° 15,98	11° 10,15	01-Jul-09
Sb-S-E04_02	54° 17,08	11° 10,16	01-Jul-09
Sb-S-E04_03	54° 17,87	11° 10,17	01-Jul-09

A P P E N D I X 4

Observed German red listed benthic species in the 2009 and 2010 sampling

Benthic species which are categorized in the German Red List (Rachor et al. 2011) as threatened [CR=critically endangered, EN=endangered, VU=vulnerable, TE=threat expected]. The frequency (percentage of occurrence) and the mean abundance (individuals per square meter) at stations where the species were present in the spring and autumn sampling campaigns are given respectively [q=qualitative record, -=no detection, *=freshwater species, Red List of (Jungbluth & Knorre 2009].

Tab.App.4- 1 Observed German red listed benthic species in the 2009 and 2010 sampling

			2009				2010			
			spring 263 stations		autumn 262 stations		spring, 236 stations		autumn, 232 stations	
Gruppe	**Art**	**Red List 2011**	**Frequency (%)**	**mean Abundance (at stations where present)**	**Frequency (%)**	**mean Abundance (at stations where present)**	**Frequency (%)**	**mean Abundance (at stations where present)**	**Frequency (%)**	**mean Abundance (at stations where present)**
Anthozoa	Halcampa duodecimcirrata	CR	1,9	26	9,9	16	6,8	10	10,8	23
Bivalvia	Macoma calcarea	CR	6,5	14	5,0	12	7,6	13	6,5	8
Bivalvia	Modiolus modiolus	EN	-	-	-	-	-	-	0,4	3
Bivalvia	Mya truncata	EN	0,4	10	3,4	13	1,7	3	1,7	2
Gastropoda	Amauropsis islandica	EN	0,4	10	0,8	5	1,3	4	0,9	7
Gastropoda	Boreotrophon truncatus	EN	1,1	15	2,3	5	0,8	4	0,9	3
Gastropoda	Buccinum undatum	EN	4,9	4	5,3	3	6,4	3	5,2	1
Gastropoda	Theodoxus fluviatilis*	EN	0,4	10	2,3	38	-	-	-	-
Polychaeta	Euchone papillosa	EN	0,4	20	3,8	10	2,5	2	9,1	4
Hydrozoa	Halitholus yoldiaarcticae	VU	4,9	q	1,1	q	4,7	q	2,2	q
Polyplacophora	Lepidochitona cinerea	VU	3,0	6	3,8	10	3,8	6	3,4	6
Bivalvia	Arctica islandica	VU	23,6	17	23,3	15	22,5	35	22,0	37
Bivalvia	Astarte montagui	VU	6,1	44	5,7	69	3,8	31	5,6	36
Gastropoda	Doto coronata	VU	0,8	5	-	-	-	-	-	-
Amphipoda	Corophium arenarium	VU	1,5	15	-	-	0,4	10	-	-
Porifera	Halichondria panicea	[TE]	8,0	q	7,6	q	7,6	q	8,2	q
Anthozoa	Metridium senile	[TE]	2,7	13	0,8	q	2,1	1	-	-
Anthozoa	Urticina felina	[TE]	2,3	7	3,8	6	1,7	6	2,2	q
Hydrozoa	Sertularia cupressina	[TE]	14,1	q	14,1	q	12,7	q	15,1	q
Bivalvia	Astarte borealis	[TE]	17,1	62	17,9	58	16,9	51	16,4	72
Bivalvia	Astarte elliptica	[TE]	14,1	73	14,1	60	11,4	51	14,7	53
Bivalvia	Modiolarca subpicta	[TE]	8,0	29	13,7	84	11,4	33	9,1	18
Bivalvia	Musculus discors	[TE]	7,2	11	6,9	92	7,2	22	5,2	22
Bivalvia	Musculus niger	[TE]	5,3	20	8,0	91	6,4	25	7,3	38
Bivalvia	Parvicardium pinnulatum	[TE]	27,4	83	43,1	307	34,3	38	37,9	544

			2009				2010			
			spring 263 stations		autumn 262 stations		spring, 236 stations		autumn, 232 stations	
Gruppe	Art	Red List 2011	Frequency (%)	mean Abundance (at stations where present)	Frequency (%)	mean Abundance (at stations where present)	Frequency (%)	mean Abundance (at stations where present)	Frequency (%)	mean Abundance (at stations where present)
Bivalvia	Spisula subtruncata	[TE]	0,4	10	10,7	29	-	-	-	-
Gastropoda	Aporrhais pespelecani	[TE]	0,8	5	2,7	1	-	-	-	-
Gastropoda	Bittium reticulatum	[TE]	11,8	63	14,9	167	12,7	188	17,7	244
Gastropoda	Ventrosia ventrosa	[TE]	1,1	q	0,4	40	0,8	25	0,4	214
Gastropoda	Monophorus perversus	[TE]	-	-	0,4	q	1,3	11	0,9	2
Gastropoda	Nassarius reticulatus	[TE]	1,1	18	1,1	3	0,8	2	1,7	2
Gastropoda	Neptunea antiqua	[TE]	1,5	q	1,5	1	2,1	2	2,2	q
Gastropoda	Tenellia adspersa	[TE]	-	-	0,4	q	-	-	-	-
Polychaeta	Amphitrite cirrata	[TE]	2,7	66	1,1	7	-	-	-	-
Polychaeta	Eulalia bilineata	[TE]	1,9	11	2,7	10	1,3	12	0,4	6
Polychaeta	Fabriciola baltica	[TE]	4,2	22	1,5	14	3,0	135	1,3	23
Polychaeta	Nereimyra punctata	[TE]	11,8	16	10,7	13	8,5	8	18,1	28
Polychaeta	Platynereis dumerilii	[TE]	3,0	14	3,1	66	-	-	1,3	13
Polychaeta	Scalibregma inflatum	[TE]	2,3	14	8,0	13	0,8	3	13,8	22
Polychaeta	Spirorbis spirorbis	[TE]	0,8	56	1,1	3294	0,8	2	-	-
Polychaeta	Travisia forbesii	[TE]	1,1	24	4,6	28	3,4	39	3,0	62
Isopoda	Lekanesphaera hookeri	[TE]	1,5	13	1,9	20	-	-	0,9	20
Amphipoda	Apherusa bispinosa	[TE]	1,1	17	6,1	13	2,5	13	1,7	8
Amphipoda	Gammarus inaequicauda	[TE]	0,8	30	-	-	1,3	103	1,3	17
Echinodermata	Echinocyamus pusillus	[TE]	9,9	43	9,2	31	8,5	15	9,9	19

A P P E N D I X 5

List of Indicator Species for each Benthic Fauna Community

Result of IV-analysis for final communities performed with the routine DULEG in R.

Tab.App.5- 1 List of Indicator Species for each Benthic Fauna Community

Taxon	max_class	max	pval	Arctica	Bathyporeia	Cerastoderma	Corbula	Dendrodoa	Gammarus	Mytilus	Rissoa	Tanaissus
Abra alba	1	0.42	0.100%	0.42	0.00	0.00	0.17	0.36	0.00	0.00	0.00	0.05
Anthozoa	5	0.74	0.010%	0.01	0.00	0.00	0.00	0.74	0.00	0.00	0.00	0.01
Alitta succinea	7	0.68	0.010%	0.00	0.02	0.00	0.01	0.02	0.05	0.68	0.01	0.01
Alitta virens	4	0.47	0.070%	0.09	0.00	0.00	0.47	0.01	0.00	0.01	0.00	0.10
Ampharete acutifrons	1	0.21	1.740%	0.21	0.00	0.00	0.07	0.03	0.00	0.00	0.00	0.00
Ampharete baltica	5	0.47	0.170%	0.19	0.00	0.00	0.10	0.47	0.00	0.00	0.00	0.18
Ampithoe rubricata	6	0.55	0.130%	0.00	0.00	0.00	0.00	0.00	0.55	0.00	0.00	0.00
Anaitides mucosa	4	0.31	0.420%	0.19	0.00	0.00	0.31	0.10	0.00	0.00	0.00	0.14
Apherusa bispinosa	6	0.31	1.540%	0.00	0.00	0.00	0.00	0.01	0.31	0.00	0.00	0.00
Arctica islandica	1	0.64	0.020%	0.64	0.00	0.00	0.14	0.09	0.00	0.00	0.00	0.10
Arenicola marina	8	0.31	1.700%	0.01	0.04	0.02	0.01	0.18	0.02	0.00	0.31	0.01
Aricidea minuta	9	0.46	0.090%	0.05	0.00	0.00	0.03	0.27	0.00	0.00	0.00	0.46
Aricidea suecica	1	0.36	0.460%	0.36	0.00	0.00	0.33	0.22	0.00	0.00	0.00	0.02
Astarte borealis	5	0.72	0.010%	0.08	0.00	0.00	0.02	0.72	0.00	0.00	0.00	0.13
Astarte elliptica	5	0.77	0.020%	0.14	0.00	0.00	0.02	0.77	0.00	0.00	0.00	0.00
Astarte montagui	5	0.30	0.800%	0.20	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.00
Asterias rubens	6	0.51	0.580%	0.01	0.00	0.00	0.01	0.09	0.51	0.00	0.00	0.04
Balanus crenatus	4	0.40	0.370%	0.16	0.00	0.00	0.40	0.08	0.00	0.01	0.00	0.00
Balanus improvisus	6	0.49	0.430%	0.00	0.00	0.00	0.00	0.00	0.49	0.01	0.00	0.00
Bathyporeia guilliamsoniana	9	0.40	0.080%	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.40
Bathyporeia pilosa	2	0.24	4.040%	0.00	0.24	0.02	0.01	0.01	0.01	0.01	0.00	0.09
Bittium reticulatum	9	0.26	5.701%	0.00	0.00	0.00	0.00	0.20	0.24	0.00	0.00	0.26
Bylgides sarsi	1	0.33	0.370%	0.33	0.00	0.05	0.24	0.07	0.04	0.01	0.00	0.04
Calliopius laeviusculus	6	0.52	0.100%	0.00	0.00	0.00	0.00	0.00	0.52	0.01	0.00	0.00
Capitella capitata	4	0.37	0.570%	0.03	0.03	0.03	0.37	0.03	0.04	0.01	0.00	0.02
Caprella linearis	5	0.57	0.030%	0.00	0.00	0.00	0.00	0.57	0.00	0.00	0.00	0.28
Carcinus maenas	6	0.17	5.391%	0.00	0.00	0.00	0.00	0.00	0.17	0.04	0.00	0.00
Caulleriella killariensis	1	0.36	0.840%	0.36	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00
Cerastoderma edule	3	0.65	0.050%	0.00	0.03	0.65	0.01	0.00	0.02	0.00	0.00	0.00
Cerastoderma glaucum	8	0.76	0.030%	0.00	0.00	0.06	0.00	0.00	0.00	0.01	0.76	0.00
Chaetozone setosa	5	0.47	0.070%	0.10	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.22
Cheirocratus sundevalli	5	0.80	0.020%	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.04
Chironomidae	8	0.88	0.020%	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.88	0.00

Taxon	max_class	max	pval	Arctica	Bathyporeia	Cerastoderma	Corbula	Dendrodoa	Gammarus	Mytilus	Rissoa	Tanaissus
Ciona intestinalis	5	0.54	0.020%	0.00	0.00	0.00	0.00	0.54	0.00	0.00	0.00	0.01
Corbula gibba	4	0.60	0.100%	0.15	0.00	0.01	0.60	0.12	0.01	0.00	0.00	0.07
Corophium crassicorne	5	0.76	0.020%	0.01	0.00	0.00	0.01	0.76	0.00	0.00	0.00	0.13
Corophium insidiosum	5	0.44	1.070%	0.00	0.00	0.00	0.01	0.44	0.23	0.03	0.00	0.16
Corophium volutator	7	0.15	11.031%	0.00	0.00	0.05	0.00	0.00	0.00	0.15	0.10	0.00
Crangon crangon	2	0.25	1.440%	0.00	0.25	0.06	0.00	0.01	0.04	0.16	0.01	0.00
Cyathura carinata	7	0.47	0.120%	0.00	0.00	0.00	0.00	0.00	0.10	0.47	0.02	0.00
Dendrodoa grossularia	5	0.77	0.020%	0.01	0.00	0.00	0.00	0.77	0.00	0.00	0.00	0.02
Diastylis rathkei	1	0.54	0.060%	0.54	0.00	0.00	0.24	0.15	0.00	0.00	0.00	0.05
Dipolydora quadrilobata	5	0.60	0.030%	0.12	0.00	0.00	0.17	0.60	0.01	0.00	0.00	0.05
Dyopedos monacantha	5	0.65	0.010%	0.00	0.00	0.00	0.00	0.65	0.00	0.00	0.00	0.04
Echinocyamus pusillus	5	0.51	0.040%	0.00	0.00	0.00	0.00	0.51	0.00	0.00	0.00	0.41
Edwardsia danica	5	0.79	0.010%	0.01	0.00	0.00	0.00	0.79	0.00	0.00	0.00	0.11
Enipo kinbergi	1	0.28	0.670%	0.28	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00
Ericthonius punctatus	6	0.25	1.640%	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00
Eteone longa	9	0.36	0.810%	0.02	0.01	0.06	0.09	0.16	0.07	0.04	0.04	0.36
Euchone papillosa	1	0.54	0.030%	0.54	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
Eumida sanguinea	5	0.81	0.010%	0.00	0.00	0.00	0.00	0.81	0.00	0.00	0.00	0.04
Exogone hebes	9	0.99	0.010%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.99
Exogone naidina	9	0.48	0.050%	0.00	0.00	0.00	0.01	0.41	0.00	0.00	0.00	0.48
Fabriciola baltica	5	0.40	0.240%	0.00	0.00	0.00	0.00	0.40	0.01	0.00	0.00	0.00
Gammarellus homari	5	0.18	2.290%	0.00	0.00	0.00	0.00	0.18	0.03	0.00	0.00	0.06
Gammarus inaequicauda	7	0.09	12.631%	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00
Gammarus locusta	6	0.13	9.621%	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00
Gammarus oceanicus	6	0.49	0.080%	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.00
Gammarus salinus	6	0.42	1.030%	0.00	0.01	0.00	0.00	0.00	0.42	0.29	0.00	0.00
Gastrosaccus spinifer	9	0.72	0.010%	0.02	0.00	0.00	0.00	0.14	0.01	0.01	0.00	0.72
Halcampa duodecimcirrata	5	0.43	0.170%	0.04	0.00	0.00	0.06	0.43	0.00	0.00	0.00	0.11
Halicryptus spinulosus	1	0.19	1.450%	0.19	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00
Harmothoe imbricata	6	0.50	0.240%	0.01	0.00	0.00	0.02	0.21	0.50	0.01	0.00	0.03
Harmothoe impar	6	0.25	3.860%	0.00	0.00	0.00	0.00	0.21	0.25	0.00	0.01	0.04
Hediste diversicolor	8	0.48	0.260%	0.00	0.03	0.07	0.00	0.00	0.00	0.05	0.48	0.00
Heteromastus filiformis	8	0.64	0.060%	0.06	0.00	0.02	0.02	0.04	0.00	0.11	0.64	0.01
Hiatella arctica	5	0.66	0.010%	0.00	0.00	0.00	0.01	0.66	0.00	0.00	0.00	0.02

Taxon	max_class	max	pval	Arctica	Bathyporeia	Cerastoderma	Corbula	Dendrodoa	Gammarus	Mytilus	Rissoa	Tanaissus
Hydrobia ulvae	3	0.42	0.050%	0.00	0.05	0.42	0.06	0.00	0.10	0.06	0.30	0.00
Idotea balthica	6	0.47	0.310%	0.00	0.00	0.00	0.00	0.00	0.47	0.07	0.01	0.00
Idotea chelipes	6	0.09	61.376%	0.00	0.00	0.00	0.00	0.00	0.09	0.01	0.04	0.00
Idotea granulosa	6	0.12	10.151%	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00
Jaera albifrons	6	0.56	0.430%	0.00	0.00	0.00	0.00	0.00	0.56	0.02	0.00	0.00
Kurtiella bidentata	5	0.48	0.110%	0.07	0.00	0.00	0.18	0.48	0.02	0.00	0.00	0.21
Lacuna vincta	6	0.15	7.181%	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00
Lagis koreni	4	0.61	0.030%	0.30	0.00	0.01	0.61	0.06	0.00	0.00	0.00	0.00
Laonome kroeyeri	5	0.58	0.060%	0.04	0.00	0.00	0.04	0.58	0.00	0.00	0.00	0.00
Lekanesphaera hookeri	8	0.47	0.020%	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.47	0.00
Lepidochitona cinerea	5	0.39	0.130%	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.06
Levinsenia gracilis	1	0.78	0.010%	0.78	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00
Littorina littorea	6	0.53	0.010%	0.00	0.01	0.00	0.00	0.01	0.53	0.13	0.00	0.00
Littorina saxatilis	8	0.46	0.590%	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.46	0.00
Lysilla loveni	1	0.52	0.050%	0.52	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.01
Macoma balthica	3	0.36	0.830%	0.03	0.01	0.36	0.29	0.05	0.08	0.02	0.02	0.01
Macoma calcarea	5	0.27	1.170%	0.21	0.00	0.00	0.01	0.27	0.00	0.00	0.00	0.04
Marenzelleria spp	7	0.62	0.010%	0.00	0.05	0.00	0.00	0.00	0.01	0.62	0.13	0.00
Megamphopus cornutus	9	0.43	0.270%	0.00	0.00	0.00	0.00	0.41	0.00	0.00	0.00	0.43
Melita palmata	6	0.10	24.922%	0.00	0.00	0.00	0.00	0.00	0.10	0.07	0.02	0.00
Microdeutopus anomalus	9	0.12	7.251%	0.00	0.00	0.00	0.03	0.09	0.00	0.02	0.00	0.12
Microdeutopus gryllotalpa	6	0.62	0.010%	0.00	0.00	0.01	0.01	0.12	0.62	0.04	0.00	0.04
Modiolarca subpicta	5	0.83	0.010%	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.12
Molgula manhattensis	5	0.58	0.010%	0.00	0.00	0.00	0.01	0.58	0.00	0.00	0.00	0.02
Musculus discors	5	0.49	0.100%	0.00	0.00	0.00	0.00	0.49	0.07	0.00	0.00	0.03
Musculus niger	5	0.92	0.020%	0.01	0.00	0.00	0.00	0.92	0.00	0.00	0.00	0.01
Mya arenaria	3	0.67	0.010%	0.00	0.05	0.67	0.02	0.00	0.09	0.02	0.05	0.00
Myriochele oculata	1	0.22	1.420%	0.22	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.02
Neoamphitrite figulus	5	0.25	1.630%	0.10	0.00	0.00	0.10	0.25	0.01	0.00	0.00	0.00
Nephtys caeca	5	0.43	0.060%	0.07	0.00	0.01	0.12	0.43	0.02	0.00	0.00	0.14
Nephtys ciliata	1	0.50	0.010%	0.50	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00
Nephtys hombergii	4	0.73	0.010%	0.04	0.00	0.01	0.73	0.00	0.00	0.00	0.00	0.00
Nephtys pente	5	0.50	0.010%	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00
Nereimyra punctata	5	0.76	0.010%	0.07	0.00	0.00	0.01	0.76	0.00	0.00	0.00	0.02
Nereis pelagica	5	0.15	3.920%	0.00	0.00	0.00	0.01	0.15	0.03	0.00	0.00	0.00

Taxon	max_class	max	pval	Arctica	Bathyporeia	Cerastoderma	Corbula	Dendrodoa	Gammarus	Mytilus	Rissoa	Tanaissus
Nicolea zostericola	5	0.83	0.010%	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.00	0.12
Nicomache minor	1	0.09	12.341%	0.09	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00
Nymphon brevirostre	5	0.43	0.350%	0.00	0.00	0.00	0.00	0.43	0.03	0.00	0.00	0.02
Odostomia scalaris	6	0.50	0.670%	0.00	0.00	0.02	0.03	0.09	0.50	0.00	0.00	0.02
Onchidoris muricata	5	0.29	0.700%	0.00	0.00	0.00	0.09	0.29	0.00	0.00	0.00	0.07
Onoba semicostata	5	0.52	0.070%	0.01	0.00	0.00	0.02	0.52	0.04	0.00	0.00	0.06
Ophelia limacina	9	0.70	0.010%	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.70
Ophelia rathkei	9	0.29	1.250%	0.00	0.07	0.04	0.00	0.00	0.00	0.01	0.00	0.29
Ophiura albida	1	0.59	0.020%	0.59	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.04
Paraonis fulgens	1	0.52	0.040%	0.52	0.05	0.03	0.01	0.01	0.00	0.00	0.00	0.00
Pariambus typicus	9	0.45	0.270%	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.45
Parvicardium hauniense	8	0.79	0.010%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.00
Parvicardium ovale	5	0.38	1.400%	0.03	0.00	0.09	0.11	0.38	0.09	0.00	0.00	0.12
Parvicardium scabrum	5	0.40	0.310%	0.01	0.00	0.00	0.11	0.40	0.01	0.00	0.00	0.13
Phaxas pellucidus	1	0.39	0.420%	0.39	0.00	0.00	0.05	0.09	0.00	0.00	0.00	0.26
Pherusa plumosa	5	0.35	0.480%	0.09	0.00	0.00	0.04	0.35	0.00	0.00	0.00	0.00
Pholoe assimilis	5	0.58	0.030%	0.15	0.00	0.00	0.15	0.58	0.00	0.00	0.00	0.00
Pholoe baltica	5	0.75	0.010%	0.11	0.00	0.00	0.02	0.75	0.00	0.00	0.00	0.01
Pholoe inornata	5	0.11	11.591%	0.06	0.00	0.00	0.00	0.11	0.02	0.00	0.00	0.04
Phoronis spp	1	0.29	1.120%	0.29	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.02
Phoxocephalus holbolli	9	0.54	0.030%	0.01	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.54
Phtisica marina	5	0.82	0.010%	0.01	0.00	0.00	0.00	0.82	0.00	0.00	0.00	0.03
Phyllodoce groenlandica	1	0.54	0.040%	0.54	0.00	0.00	0.03	0.01	0.00	0.00	0.00	0.00
Phyllodoce maculata	5	0.31	0.600%	0.01	0.00	0.00	0.22	0.31	0.00	0.00	0.00	0.00
Platynereis dumerilii	8	0.42	0.170%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.00
Polycirrus medusa	9	0.70	0.020%	0.01	0.00	0.00	0.01	0.26	0.00	0.00	0.00	0.70
Polydora caeca	1	0.43	0.100%	0.43	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.02
Polydora ciliata	5	0.30	0.740%	0.05	0.00	0.00	0.06	0.30	0.00	0.00	0.00	0.00
Polydora cornuta	7	0.18	27.523%	0.00	0.00	0.04	0.01	0.00	0.14	0.18	0.17	0.00
Praunus inermis	6	0.17	3.450%	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00
Priapulus caudatus	1	0.48	0.040%	0.48	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00
Protomedeia fasciata	5	0.47	0.100%	0.09	0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00
Pseudopolydora pulchra	5	0.34	0.340%	0.09	0.00	0.00	0.01	0.34	0.00	0.00	0.00	0.00
Pusillina inconspicua	6	0.61	0.120%	0.00	0.00	0.02	0.00	0.00	0.61	0.06	0.00	0.00
Pusillina sarsii	8	0.25	2.040%	0.00	0.00	0.02	0.00	0.00	0.00	0.05	0.25	0.00
Pygospio elegans	7	0.22	17.532%	0.00	0.01	0.04	0.17	0.20	0.08	0.22	0.16	0.03
Retusa obtusa	1	0.24	1.410%	0.24	0.00	0.00	0.00	0.03	0.00	0.00	0.05	0.00

Taxon	max_class	max	pval	Arctica	Bathyporeia	Cerastoderma	Corbula	Dendrodoa	Gammarus	Mytilus	Rissoa	Tanaissus
Retusa truncatula	4	0.28	3.810%	0.10	0.00	0.12	0.28	0.19	0.05	0.00	0.01	0.00
Rissoa membranacea	8	0.25	3.000%	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.25	0.00
Scalibregma inflatum	1	0.37	0.220%	0.37	0.00	0.00	0.16	0.06	0.00	0.00	0.00	0.01
Scoloplos armiger	4	0.24	5.891%	0.22	0.00	0.12	0.24	0.12	0.01	0.00	0.08	0.06
Spio filicornis	5	0.48	0.070%	0.02	0.00	0.00	0.02	0.48	0.00	0.00	0.00	0.02
Spio goniocephala	9	0.73	0.010%	0.01	0.00	0.00	0.01	0.19	0.00	0.00	0.00	0.73
Spio martinensis	5	0.31	0.430%	0.01	0.00	0.00	0.00	0.31	0.00	0.00	0.00	0.01
Spirorbis corallinae	5	0.33	0.090%	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00
Spirorbis spirorbis	5	0.39	0.170%	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.00
Spisula subtruncata	4	0.30	0.850%	0.02	0.00	0.05	0.30	0.00	0.00	0.00	0.00	0.01
Stenothoe monoculoides	6	0.10	12.661%	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00
Streblospio shrubsoli	8	0.24	0.880%	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.24	0.00
Streptosyllis websteri	9	0.84	0.010%	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00	0.84
Tanaissus lilljeborgi	9	0.96	0.010%	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.96
Terebellides stroemi	1	0.53	0.030%	0.53	0.00	0.00	0.36	0.08	0.00	0.00	0.00	0.00
Theodoxus fluviatilis	8	0.54	0.010%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.54	0.00
Thracia papyracea	9	0.50	0.080%	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.50
Travisia forbesii	9	0.91	0.010%	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.91
Trochochaeta multisetosa	1	0.56	0.030%	0.56	0.00	0.00	0.41	0.00	0.00	0.00	0.00	0.00
Tubificoides benedii	7	0.27	2.560%	0.00	0.01	0.00	0.02	0.21	0.00	0.27	0.13	0.10
Turbellaria	9	0.32	0.960%	0.02	0.00	0.00	0.00	0.26	0.01	0.00	0.00	0.32

A P P E N D I X 6

Additional Information on the Community Analysis

1. Multivariate Analysis

Due to the different sampling designs and effort, the shallow and deep water data sets were *a priori* treated separately (see Section 4.2 of the main report). Thus, the identification of clusters ("groups") was done separately for the two data sets as a first step. Subsequently, groups featuring identical characteristics were merged to communities regarding the combined, full data set.

Grouping of stations

For the **deep water** data set, the result of the hierarchical clustering showed a clearly structured dendrogram, starting with segregation at a level of around 15 % similarity. This indicated a clear pattern within the deep water benthic assemblages (App. 6 Figure 1). Cut-offs were set at different similarity values corresponding to different numbers of resulting groups ranging from 2 (cut-off at 15%) and up to 10 groups (50%).

A combination of SIMPER- and IV-analysis (see Section 4.2 of the main report) indicated the highest performance for separating 7 or 8 distinct groups. For final selection of number split, a Non-metric Multidimensional Scaling or NMS-plot (which is the same as a n-MDS plot) was drawn (App. 6 Figure 1). The corresponding two-dimensional plot did not show a clear separation between the clusters deep_g and deep_h. However, it does show a separation between the remaining six clusters.

The triangular shape of the cloud indicates the presence of more than one gradient in species composition. One gradient runs from deep_c via deep_a to deep_h. A second gradient runs from deep_c via deep_b to deep_ d. The groups deep_d, deep_e, deep_g and deep_h seem to be included in a third "gradient", which actually consists of more than one gradient (dimension).

However, in the three-dimensional plot (not shown), the separation of the questionable clusters deep_g and deep_h was more obvious and additional analysis emphasised the relevance of splitting this group into two clusters. Thus, the separation into 8 clusters (in the following named deep_a through _h) was chosen as the basis for the following analysis.

As a final step: cluster deep_f consists of a single station (HB 29) and was therefore excluded from further analysis, effectively reducing the number of deep water groups to seven.

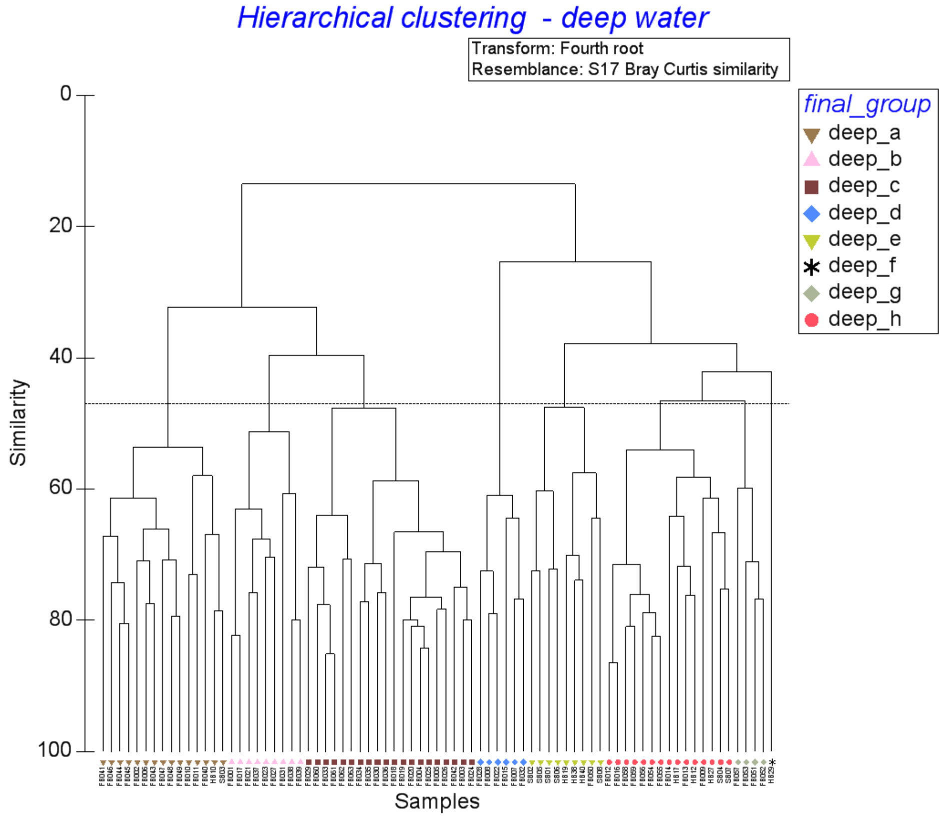

Fig.App.6- 1 Hierarchical clustering of the deep water (averaged) data. The horizontal line in the dendrogram marks the final cut-off for groups. "Samples" are sampling stations.

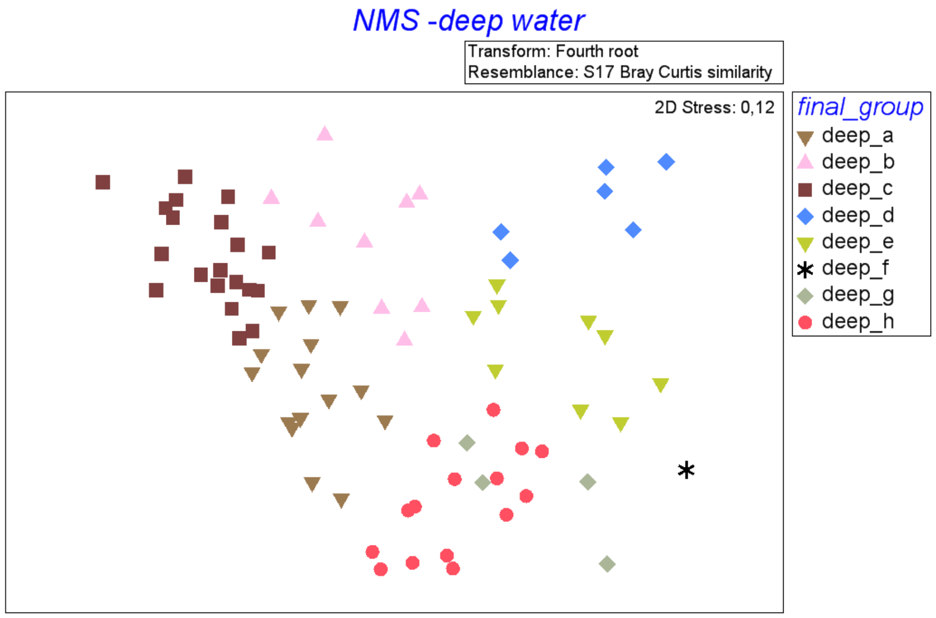

Fig.App.6- 2 Non-metric Multidimensional Scaling or NMS-plot of the deep water (averaged) data. The horizontal line in the dendrogram marks the final cut-off for groups.

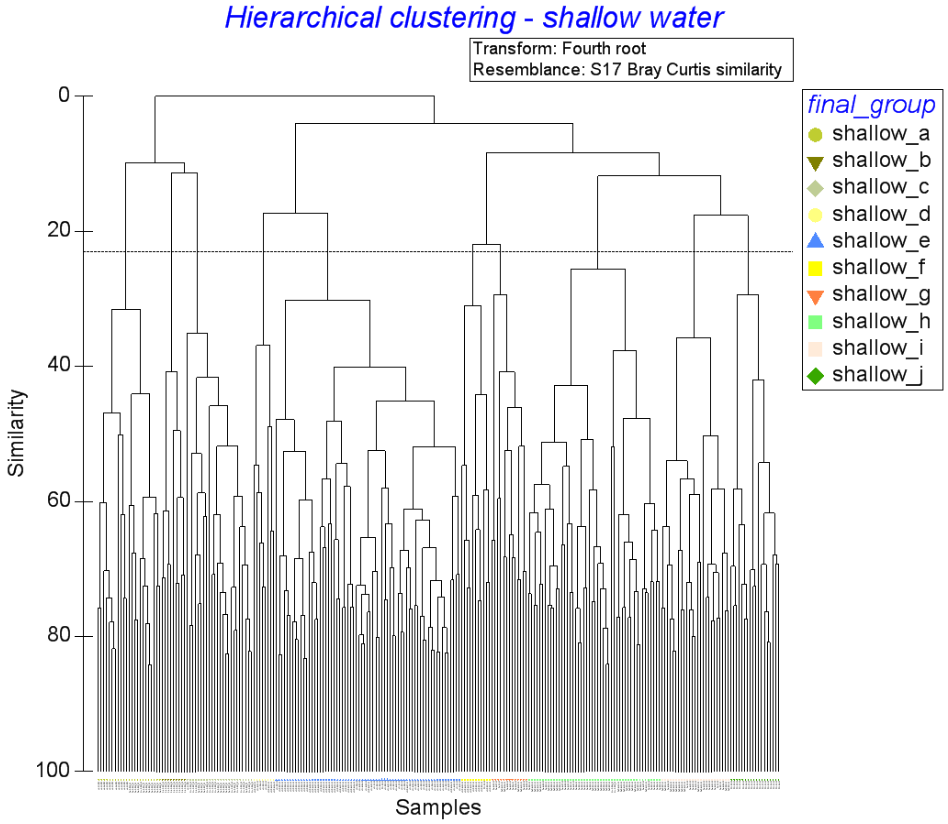

Fig.App.6- 3 Hierarchical clustering of the shallow water (averaged) data. The horizontal line in the dendrogram marks the final cut-off for groups. "Samples" are sampling stations.

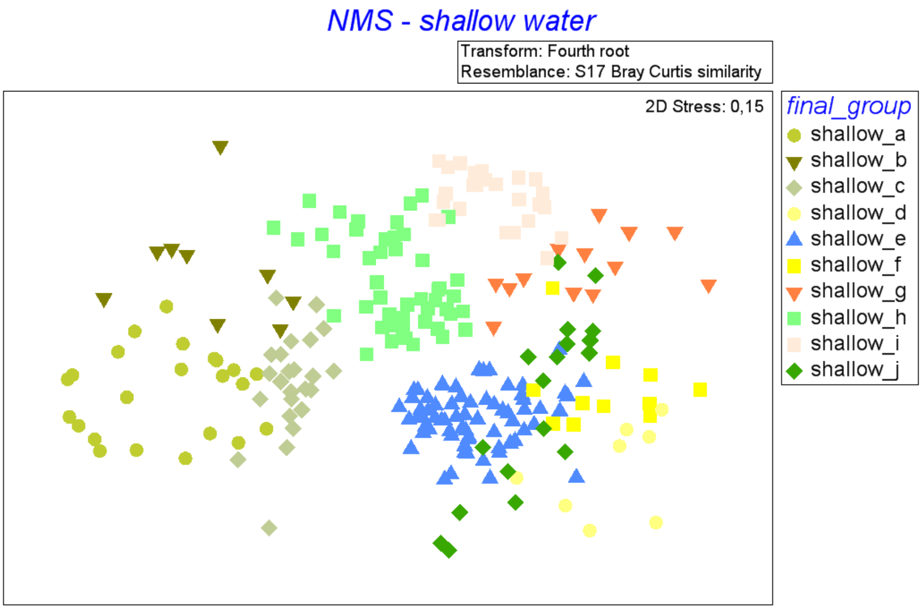

Fig.App.6- 4 Non-metric Multidimensional Scaling or NMS-plot of the shallow water (averaged) data. The horizontal line in the dendrogram marks the final cut-off for groups.

The resulting structure for the **shallow water** stations turned out to be much more ambiguous. In the hierarchical clustering, the first splitting took place at a similarity level of 0% followed by several splits at similarities lower than 25% (Fig.App.6- 3 4).

In order to keep the complexity at a minimum, the highest dissimilarity value for clustering was set to 29 %, leading to a maximum of 11 groups. The same algorithm as above (deep water stations) was used to identify the best performing number of groups, leading to the pre-selection of 7 and 10 groups, respectively. As the splitting into 7 groups led to one group without any indicative species and did not show a reasonable pattern in a NMS-plot, the 10 group-solution was chosen for final analysis.

In the final NMS-plot (Fig.App.6- 4 4), some overlap between groups was visible. This espcially emphasised the heterogeneity of the data set and the difficulty to find optimal clusters. The highest uncertainty was detected in the groups shallow_b and shallow_j, which were both more or less subdivided into two sub-groups.

Linkage with environmental parameters
In the second step of the analysis, the groups of benthic fauna were linked with the available environmental parameters to challenge the abiotic background in the grouping. That is, an attempt was made to observe a similar clustering in the environmental variables as was found in the benthic fauna, using ANOSIM-, overall and group-specific BIO-ENV procedures. For illustration of any underlying pattern(s), PCA-plots were used.

The overall BIO-ENV procedure showed a strong linkage between the biological data and the environmental parameters for the **deep water** part (coefficient = 0.625). Median grain size, water depth, shear stress, current speed and mean oxygen content were detected to be the most important variables. This correlation was less pronounced for the **shallow water** data set. It reached maximum (coefficient = 0.428) using four variables: mud content, water depth, salinity and shear stress. In separated correlation-tests, only a few of the groups show clear correlation with singular explanatory variables.

In order to observe the same clustering of the biological data set in the explanatory, environmental data set, PCA and ANOSIM-tests were conducted. For the deep water data set, both analyses performed quite well. Whereas the distinction between clusters was not so strong in the PCA-plot (App. 6 Figure 5), it emerged quite strong in the ANOSIM-test.

The shallow water data again showed a less clear pattern and only a weak correlation between biota data and the available environmental data set. Single groups were obviously separated from each other both in PCA-plot (Fig.App.6- 6 6) and in ANOSIM-analysis, but the overall pattern remained rather indistinct.

Remembering the heterogeneity of the underlying data (see Section 4.2 of the main report), one has to assume that seasonal variability, differences in sampling effort and medium-scale spatial variability exert a strong influence on the overall pattern in biota structure.

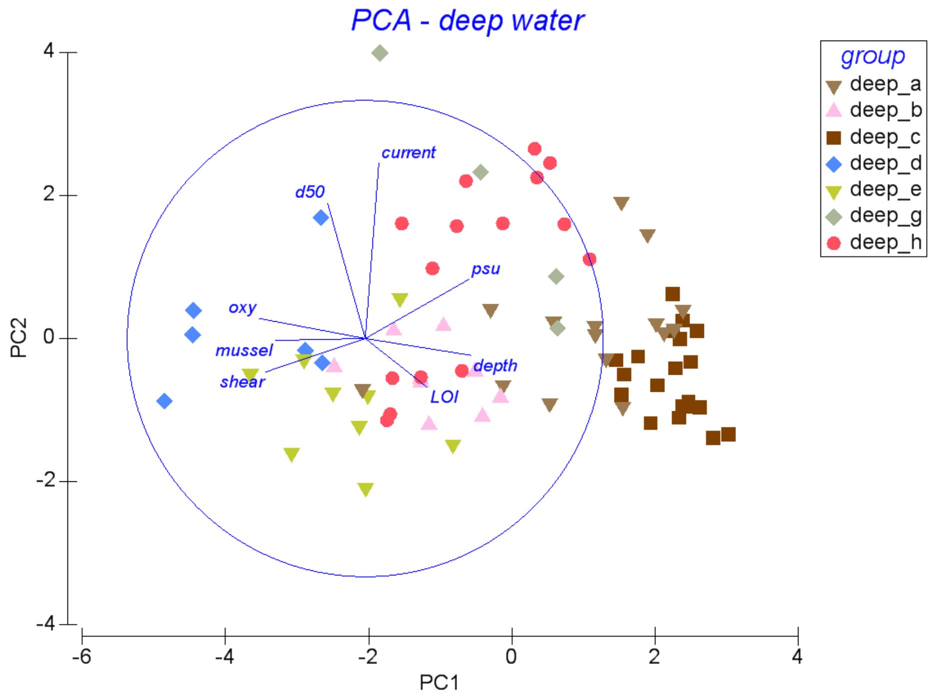

Fig.App.6- 5   PCA-plot of deep water (averaged) data set, highlighting the identified groups.

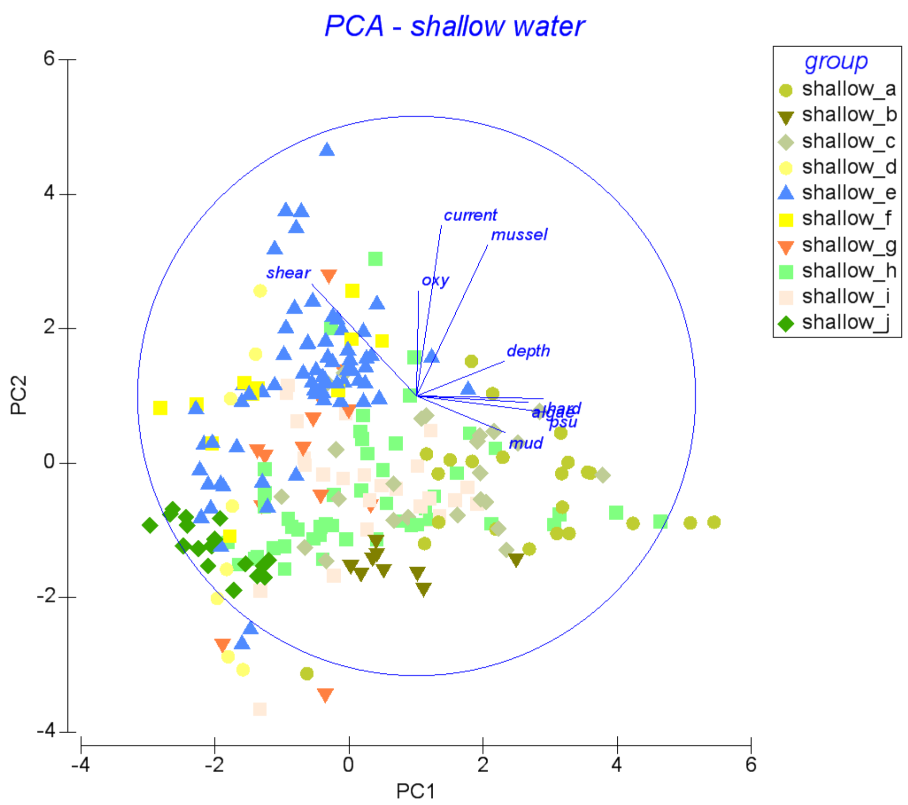

Fig.App.6- 6   PCA-plot of shallow water (averaged) data set, highlighting the identified groups.

Transferring clusters to benthic communities

In the final step of this analysis, the clusters were merged and transferred to actual benthic fauna communities. This step was rather difficult, because some of the clusters did not show any clear correlation with available environmental parameters. Moreover, sometimes there were (secondary) relationships between the clusters which were not very obvious.

The process of merging the clusters and defining communities is thus mainly based on expert knowledge (summarised in Section 4.2 of the main report). Environmental and ecological information about each cluster was subsequently cross-referenced with that of the other clusters to obtain insight about clusters sharing characteristics with other clusters. The shared characteristics between the clusters are summarised into a "relation matrix" (Tab.App.6-1).

During the data-mining process, cluster shallow_j turned out to be clearly subdivided into two sub-groups, of which one was obviously linked to the presence of eelgrass (*Zostera* sp.) meadows. This division would have been one of the next splits in the hierarchical clustering (at a similarity level of 30%) and there existed strong scientific evidence for defining a distinct "eelgrass community". Therefore, the cluster shallow_j was split, following the cluster analysis specifications.

Tab.App.6- 1 Summary of analysing the relation between the clusters: Red filled cells indicate high evidence of relation between the respective clusters, yellow cells low or medium relation, white cells indicate no relation; dark-grey cells indicate 100% relation (same cluster).

CLUSTER	deep_a	deep_b	deep_c	deep_d	deep_e	deep_g	deep_h	shallow_a	shallow_b	shallow_c	shallow_d	shallow_e	shallow_f	shallow_g	shallow_h	shallow_i	shallow_j
deep_a																	
deep_b																	
deep_c																	
deep_d																	
deep_e																	
deep_g																	
deep_h																	
shallow_a																	
shallow_b																	
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shallow_d																	
shallow_e																	
shallow_f																	
shallow_g																	
shallow_h																	
shallow_i																	
shallow_j																	

Finally, a total of 9 benthic fauna communities were derived from the 17 clusters, comprising both epi- and infauna assemblages.

2. Predictive Distribution Modelling

The outcome of generating the classification tree was a split into 17 terminal nodes (clusters), each presenting a single community with a specific probability of correct classification (App. 6 Figure 7). From the available environmental parameters, eight were used as splitting criterion indicating the high relevance of several abiotic parameters.

First and foremost, the driving factor for the most important split was water depth splitting at 13.4 m, adjusting the artificial split of the data set at 10 m. Salinity, sediment characteristics (substrate class and mud content), seasonal oxygen content (summer mean and winter minima) and maximum bed shear stress were the responsible abiotic parameters for determination of the subsequent subnodes. The vegetation communities as additional biotic parameter were selected four times, leading to five terminal nodes.

Each of the nine communities represented at least one terminal node. Four terminal nodes were found for the community Gammarus and three for Bathyporeia. Two were designated to Cerastoderma, Mytilus and Rissoa respectively.

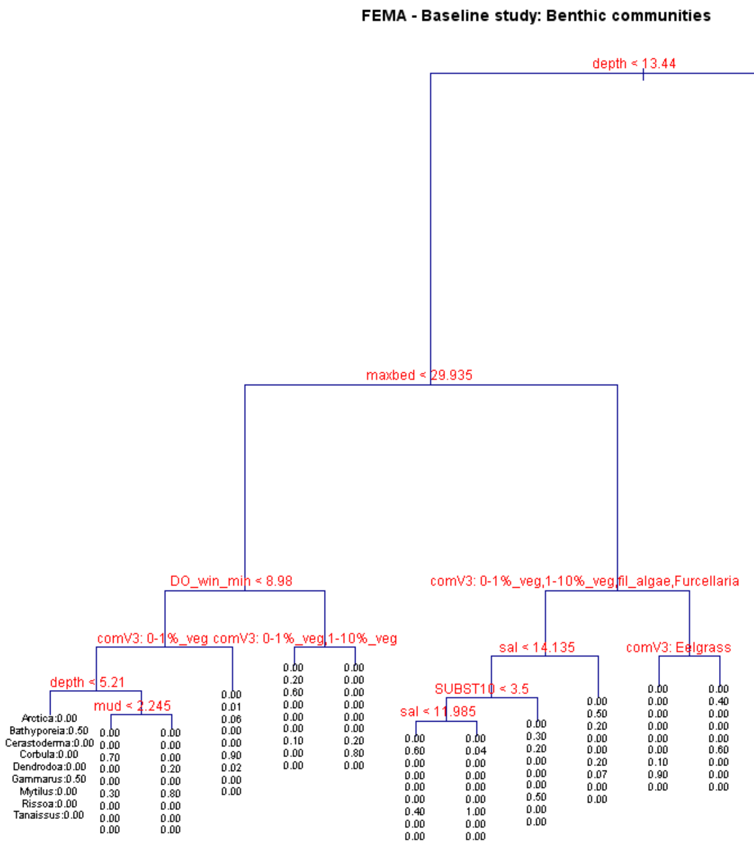

Fig.App.6- 7 Final decision tree for discrimination of benthic communities (sal: mean annual salinity; subs10: 1 - coarse sediments/boulders, DO_sum_mean: oxygen summer mean, DO_win_min: oxygen winter minimum, maxbed = maximum shear stress, mud = mud content (%), depth = water depth (m), comV3: vegetation community with 0-1%/1-10%_veg: coverage any vegetation community, fil_algae: filamentous algae).

The decision tree (Fig.App.6- 7) was validated using cross-validation. The goodness-of-fit was shown in a misclassification matrix (App. 6 Table 2). In this matrix the actual community (input into the model) was given in columns whereas the predicted community (outcome of the model) was shown in lines. Thus, it could be read as bi-directional:

- Following the lines the **relevance** of the resulting tree for the respective community can be read: the probability that a positive prediction for this community actually is true.
- The **sensitivity** of the tree for the special community follows from reading the columns: this criterion indicates the probability that an actual presence of the community is correctly predicted (=power).

The **sensitivity** was very high (>90 %) for the Arctica, Rissoa and Tanaissus communities. Except for Bathyporeia and Cerastoderma communities (50 and 59.4 %, resp.), the values were quite good for the remaining communities (>70 %).

Also the **relevance** values were acceptable for most communities (Tab.App.6- 2). The classification tree performed poorly in the separation of the shallow water infauna (Bathyporeia and Cerastoderma) from the epibenthic communities (Gammarus and Mytilus).

Mainly due to this poor performance, the overall misclassification ratio was 19.4 % (Tab.App.6- 2). This value seems to be rather high, indicating certain shortcomings in the overall performance of the tree.

In modelling the soft-bottom communities of the German Bight, (Pesch et al. 2008) attained a misclassification ratio of 16–17%. (Pesch et al. 2008) were exclusively modelling the distribution of soft bottom communities with a variety of 20 environmental factors. In the present study, epifauna communities were included, although the driving parameters for these communities were not available. Thus, as mentioned above, the separation and classification of these epifauna communities had to be calculated by approximation via the available factors. Including these given limitations in the environmental data set, the predicting power of the resulting model is still acceptable.

Tab.App.6- 2 Misclassification matrix of the final tree for discrimination of benthic communities (Fig.App.6- 7).

		Actual community									
		Arctica	**Bathyporeia**	**Cerastoderma**	**Corbula**	**Dendrodoa**	**Gammarus**	**Mytilus**	**Rissoa**	**Tanaissus**	**total**	**relevance (%)**
predicted community	**Arctica**	32	0	0	0	2	0	0	0	0	34	94.1%
	Bathyporeia	0	16	3	0	0	7	4	0	0	30	53.3%
	Cerastoderma	0	2	19	0	0	5	1	0	0	27	70.4%
	Corbula	1	0	0	7	0	0	4	0	0	12	58.3%
	Dendrodoa	2	0	0	0	12	0	0	0	0	14	85.7%
	Gammarus	0	5	6	2	1	100	2	0	0	116	86.2%
	Mytilus	0	9	4	0	0	0	60	0	0	73	82.2%
	Rissoa	0	0	0	0	0	0	2	11	0	13	84.6%
	Tanaissus	0	0	0	0	0	1	0	0	4	5	80.0%
	total	35	32	32	9	15	113	73	11	4	**missclassi-fication ratio = 19,4%**	
	sensitivity (%)	91%	50%	59%	78%	80%	89%	82%	100%	100%		

3. Community Distribution Mapping

The following steps were taken in order to generate the community distribution map based on the final CART. The data on the incorporated environmental parameters were available in different resolutions. In order to retain the highest resolution for the analysis, the substrate data layer was chosen as a "reference grid". The other environmental data layers were subject to resampling using nearest-neighbour assignment that does not change any of the values of cells from the input layer. Both the cell size and extent were set to the values of the "reference grid", so that the pixels of each grid would match each other. Then, for each node (cluster) of the CART-tree the calculation was performed in Raster Calculator (ArcMap, ESRI Inc., Redlands, USA) using the Con (conditional if/else evaluation) function.

The resulting layers (each predicting the distribution of one community) were merged together in the final "modelled benthic communities" distribution raster. In this raster, each of the cells was assigned to one of the 9 communities resulting in a comprehensive benthic fauna community map. Due to the weakness of segregating infauna and epibenthic communities in shallow waters, the resulting map was analysed thoroughly to identify obvious misclassifications. The additional information that was used for this *a posteriori* check, originated mainly from aerial photography, divers observations and underwater video footage. As a result of this checking process, three small areas close to the island of Fehmarn were subject to (manual) change, which are namely:

(1) Staberhuk: an area identified by aerial photography and validated by video-transects as an obvious Mytilus community, thereby overruling the predicted communities

(2) Flüggesand: an area modelled to be a Mytilus area was changed into a Bathyporeia area, because underwater video footage revealed the dominance of sandy substrates, with low to very low presence of *Mytilus edulis*

(3) Wallnau: the addition of a narrow Mytilus area to the dominating Gammarus community

Finally, the harbours at Rødbyhavn and Puttgarden were excluded from community prediction, because these heavily modified habitats were not sampled and could not be assigned to any of the natural communities using the scientific method described above. The final benthic fauna community distribution map is shown in Section 4.2 of the main report.

A P P E N D I X 7

Additional Information on the WFD Assessment

General
The following samples where used to assess the ecological status of the different water bodies. In each case, 21 samples were used for maximum comparability, only for the Rødsand water body 20 samples were used:

Country	Water body	Transects
Germany	Fehmarnbelt (E)	Fe-W01. Fe-00. Fe-E01 – Fe-E05
Germany	Fehmarnbelt (W)	Fe-W02 – Fe-W08
Germany	Fehmarn Sund (E)	FeR-E06 – FeR-E12
Germany	Fehmarn Sund (W)	FeR-W09 – FeR-W15
Denmark	Femerbælt (E)	Lo-00, Lo-E01 – Lo-E06
Denmark	Femerbælt (M)	Lo-W01 – Lo-W06, LoR-W07
Denmark	Åbne del Femerbælt 12 sm	LoR-E07 – LoR-E13
Denmark	Femernbælt (W)	LoR-W08 – LoR-W14
Denmark	Rødsand	Ro-01 – Ro-07

MarBIT
All calculations were done according to Meyer et al. (2009).

The results of the four metrics that yield the EQR of the MarBIT index for the German water bodies are listed in the following table:

Water body	Season	m1	m2	m3	m4	MarBIT EQR
Fehmarnbelt (E)	spring 2009	0.446	0.427	0.511	0.624	0.479 (moderate)
Fehmarnbelt (W)		0.416	0.198	0.456	0.608	0.436 (moderate)
Fehmarn Sund (E)		0.537	0.336	0.533	0.703	0.535 (moderate)
Fehmarn Sund (W)		0.411	0.194	0.428	0.631	0.420 (moderate)
Fehmarnbelt (E)	spring 2010	0.440	0.463	0.456	0.578	0.459 (moderate)
Fehmarnbelt (W)		0.390	0.520	0.428	0.654	0.474 (moderate)
Fehmarn Sund (E)		0.502	0.294	0.600	0.694	0.551 (moderate)
Fehmarn Sund (W)		0.381	0.529	0.456	0.669	0.492 (moderate)

The following table lists the results for the MarBIT index of the Danish water bodies:

Water body	Season	m1	m2	m3	m4	MarBIT EQR
Femerbælt (E)	spring 2009	0.234	0.194	0.200	0.458	0.217 (poor)
Femerbælt (M)		0.245	0.498	0.267	0.464	0.365 (poor)
Åbne del Femerbælt 12 sm		0.200	0.621	0.178	0.451	0.326 (poor)
Femernbælt (W)		0.249	0.193	0.222	0.464	0.235 (poor)
Femerbælt (E)	spring 2010	0.252	0.738	0.178	0.415	0.333 (poor)
Femerbælt (M)		0.209	0.533	0.267	0.451	0.359 (poor)
Åbne del Femerbælt 12 sm		0.268	0.207	0.267	0.489	0.268 (poor)
Femernbælt (W)		0.217	0.453	0.133	0.383	0.300 (poor)
Rødsand	spring 2009	0.561	0.561	0.463	0.720	0.561 (moderate)

m1 = metric for taxonomic composition (taxonomic spread index TSI)
m2 = metric for abundance distribution among species
m3 = metric for fraction of sensitive species
m4 = metric for fraction of tolerant species
MarBIT EQR= final EQR value as median of m1–m4

For all assessments, the reference lists for the soft bottom of the respective water bodies were used from: (Meyer et al. 2009):

Water body	Reference list
Fehmarnbelt (E)	Kieler Bucht. Weichboden
Fehmarnbelt (W)	Kieler Bucht. Weichboden
Fehmarn Sund (E)	Mecklenburger Bucht. Weichboden
Fehmarn Sund (W)	Kieler Bucht. Weichboden

For the Danish water bodies, no dedicated reference lists exist. The nearest German water body, however, was "Fehmarnbelt", so the reference list "Kieler Bucht, Weichboden" was used there. For the water body "Rødsand", the reference list "Buchten, Weichboden" was used, since this list applies to the Orth Bight and comes close to the conditions found in the Rødsand lagoon.

DKI

All calculations where done according to the instruction of Alf Josefson (NERI. Denmark), who provided the assessment method and formula. The formula for the DKI is as follows:

$$DKI = \frac{1 - \frac{BC - BC_{min}}{7} + \frac{H}{H_{max}}}{2} \times \left(1 - \frac{1}{N}\right)$$

where

DKI = DKI EQR value

BC = biotic coefficient of the AMBI (Azti Marine Biotic Index; Borja et al. 2000)

BC_{min} = possible minimum value of the BC at a certain salinity (see below)

H = Shannon diversity (see below)

H_{max} = maximum possible value of H at a certain salinity

N = number of individuals in the sample

Since the values that can be obtained for both H and BC are dependent on the salinity, the DKI formula integrates the minimum BC and maximum H derived from sample data of the Western Baltic Sea. A regression of both indices against salinity yielded the following relations:

$$H_{max} = 2.117 + 0.086 \times S$$
$$BC_{min} = 3.083 - 0.111 \times S$$

where S is the salinity of the assessed area. For the investigation area a median value of S=16 was chosen based on the data from the Fehmarnbelt hydrographic group, mainly the stations NS07, NS08, and H031. The DKI values were calculated per sample and subsequently the water body assessment done according to Leonardsson et al. (2009).

Abundance-Rank

In the figure below (Fig.App.7- 1) a so-called abundance-rank-diagram is shown. The abundance is shown on the x axis, which is actually ^{10}log(Abundance). Thus, in this example, the highest value on the right end of the x-axis is 4.2, which corresponds to ca. 16.000 individuals. The y-axis denotes the cumulative relative abundance, as a fraction of the total of individuals from the sample taken at this particular sampling station, starting at 0 and ending at 1 (= all specimens from sample).

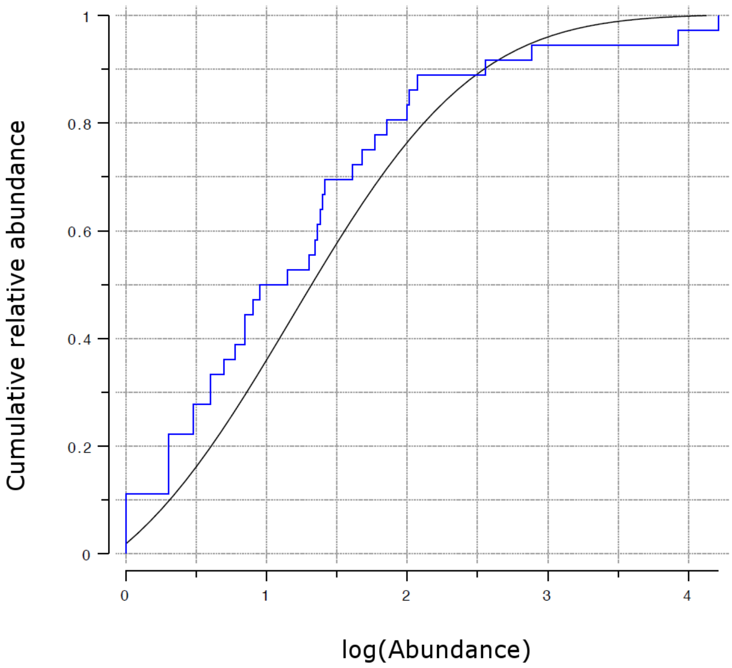

Fig.App.7- 1 A so-called abundance-rank diagram, showing the distribution of "sets" of macrobenthic infauna, with similar abundances over the cumulative relative abundance of a sampling station. The x-axis shows the ^{10}log of the Abundance of species at a given benthic sampling station. The y-axis shows the cumulative relative abundance. The smooth black curve is an idealised distribution of the cumulative relative abundance versus the log(Abundance). The blue line is actual data. See text for more detailed explanation.

First and foremost, a black smooth line is visible in the graph. This is the ideal log-normal distribution of the abundances of the species in the sample, calculated from the sample data. Then there is the blue line -the actual data- which should be read like this: on the left of the graph are the species with low absolute abundance, starting with the species only represented by one specimen (abundance of 1 = zero on the logarithmic scale of the x-axis). Then the line goes straight up, because there is a certain amount of species with abundance 1 (because ^{10}log(0)=1), actually a little above 10% of the total abundance (≈ 0.1 on the y-axis). Note that the y-axis is cumulative, so each upwards pointing part of the blue line marks a certain amount of additional species in the sample with the same absolute abundance (let those species be called a "set"). One can always see how much the amount of all "sets" is in terms of relative abundance by looking at the vertical parts of the blue line.

The horizontal part of the blue line denotes how much the difference is in abundance (on the log scale, x-axis) between the individual "sets".

Now for the interpretation: an ideal sample would follow the black line very tightly. However, often there is a deviation and the one in the example is typical. There is a larger amount of low-abundance species (or "sets" of species) with respect to the log-normal model, because the blue line runs ABOVE the black line in the left end of the graph. There is also a lower amount of the most abundant species, because the blue line is BELOW the black line in the right end of the graph.

The index for abundance now measures, in principle, the maximum vertical distance between the blue and the black line. This will often be case in the middle region of the graph and this is sensible, since it downweighs the influence of the singletons and the most abundant taxa.

A P P E N D I X   8

Size class distributions of Blue Mussels (Mytilus edulis)

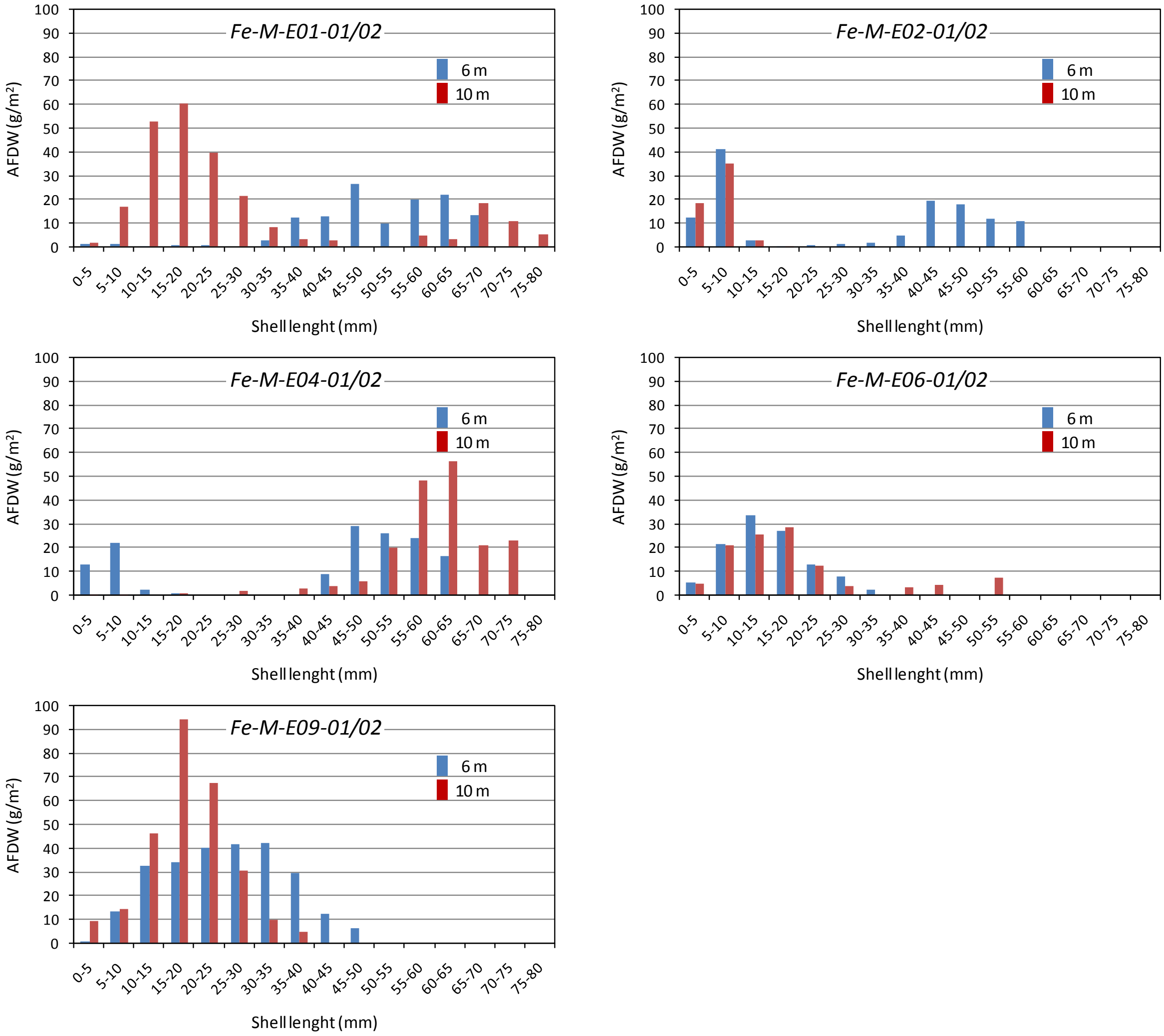

Fig.App.8- 1 Size distribution of AFDW in mussels sampled at 2 depths along transects FE-M-E01 to FE-M-E04 and FE-M-E06 to FE-M-E09 east of the alignment along the Fehmarn coast.

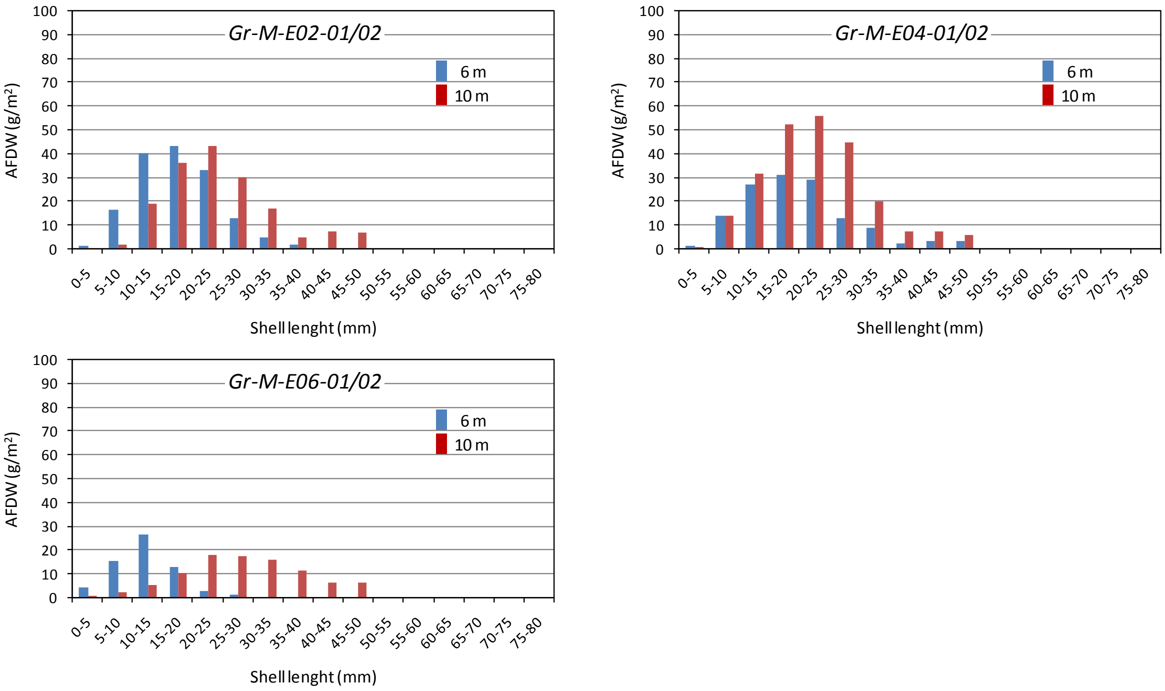

Fig.App.8- 2 Size distribution of AFDW in mussels sampled at 2 depths along transects on east coast of Großenbrode, i.e. 'reference area' (Gr-M-E02 to Gr-M-E06).

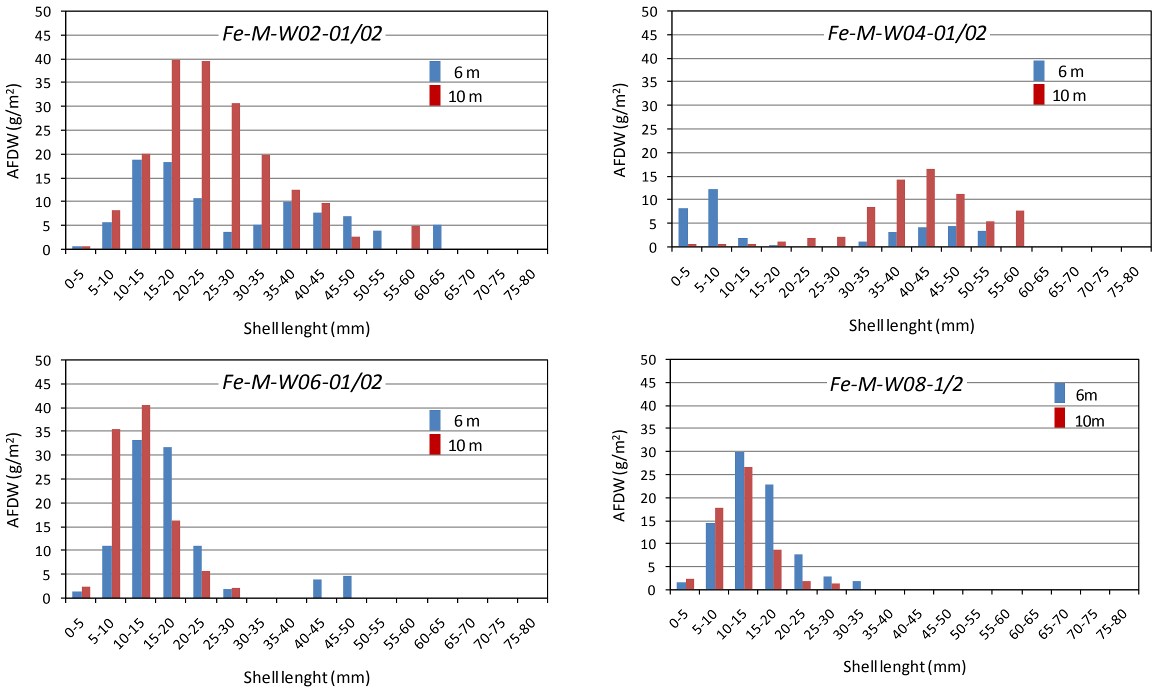

Fig.App.8- 3 Size distribution of AFDW in mussels sampled at 2 depths along transects Fe-M-W01 to Fe-M-W04 and Fe-M-W06 to Fe-M-W08 west of the alignment along the Fehmarn coast.

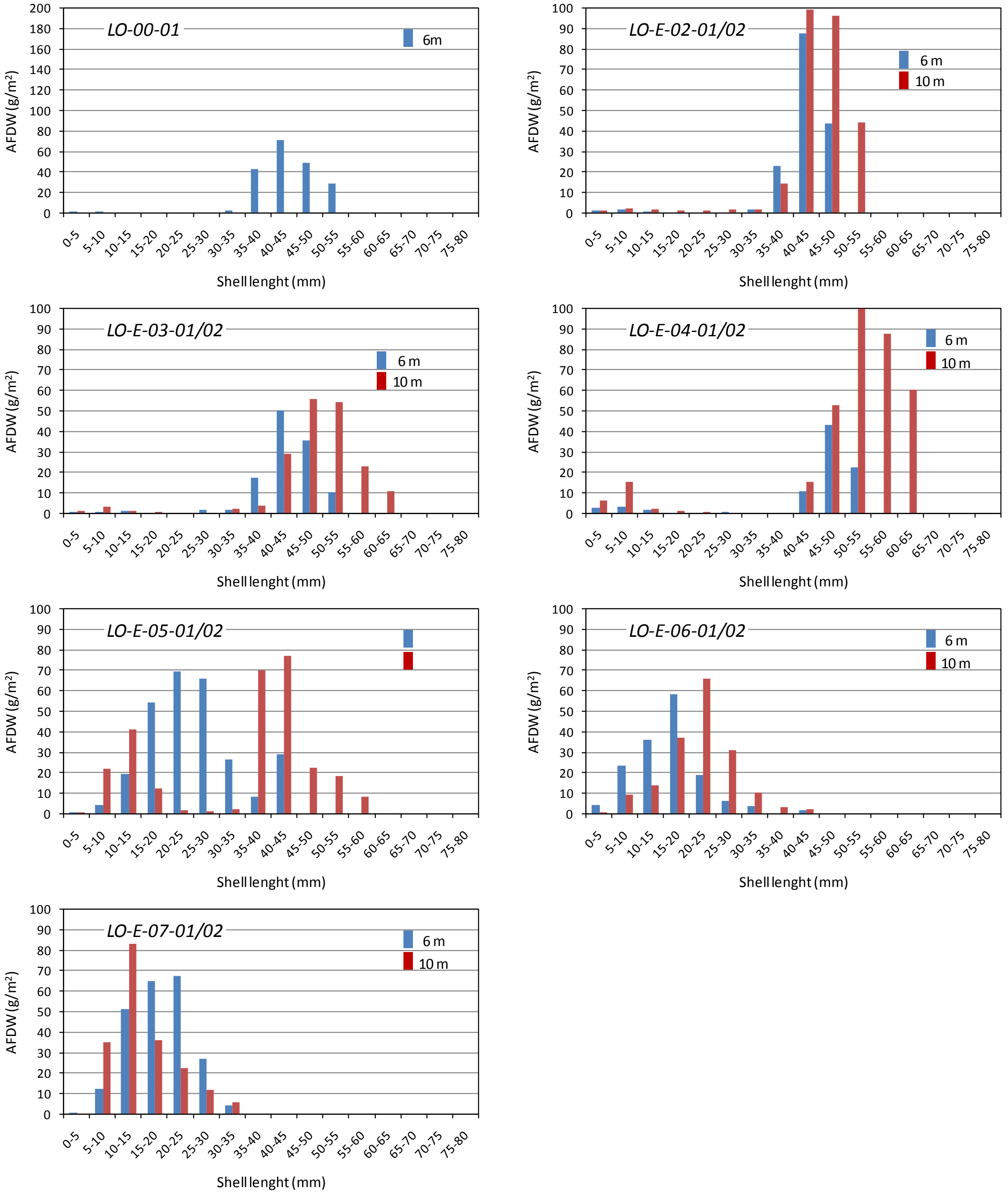

Fig.App.8- 4 Size distribution of AFDW in mussels sampled at 2 depths along transects within LO-00 to LO-E-04 and LO-E-05 to LO-E-07 located east of alignment on Lolland.

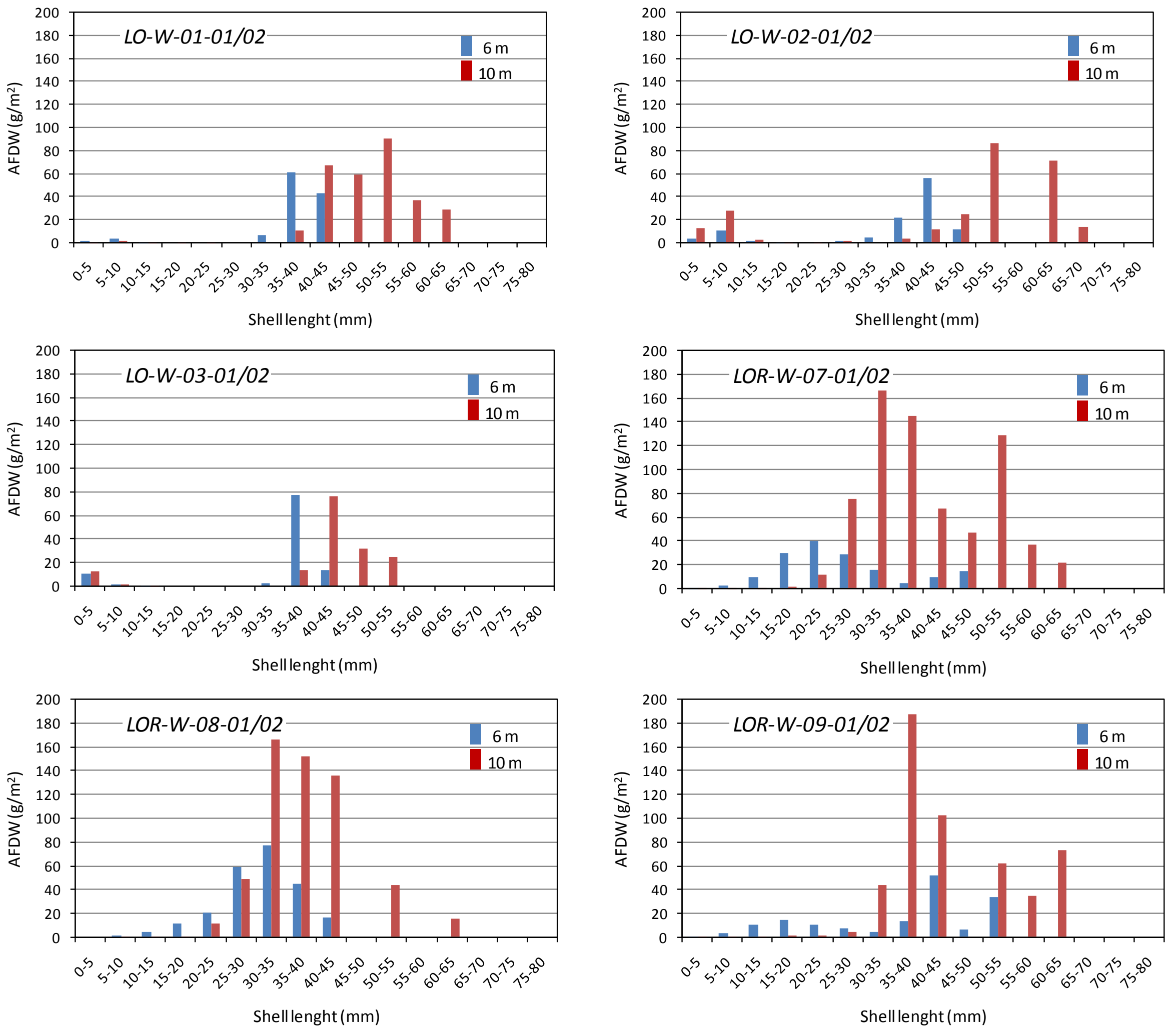

Fig.App.8- 5 Size distribution of AFDW in mussels sampled at 2 depths along transects within LO-W-01 to LO-W-04 and LO-W-07 to LO-W-09 (Albue Bank) located west of alignment on Lolland.

A P P E N D I X   9

Overview map with geographical locations

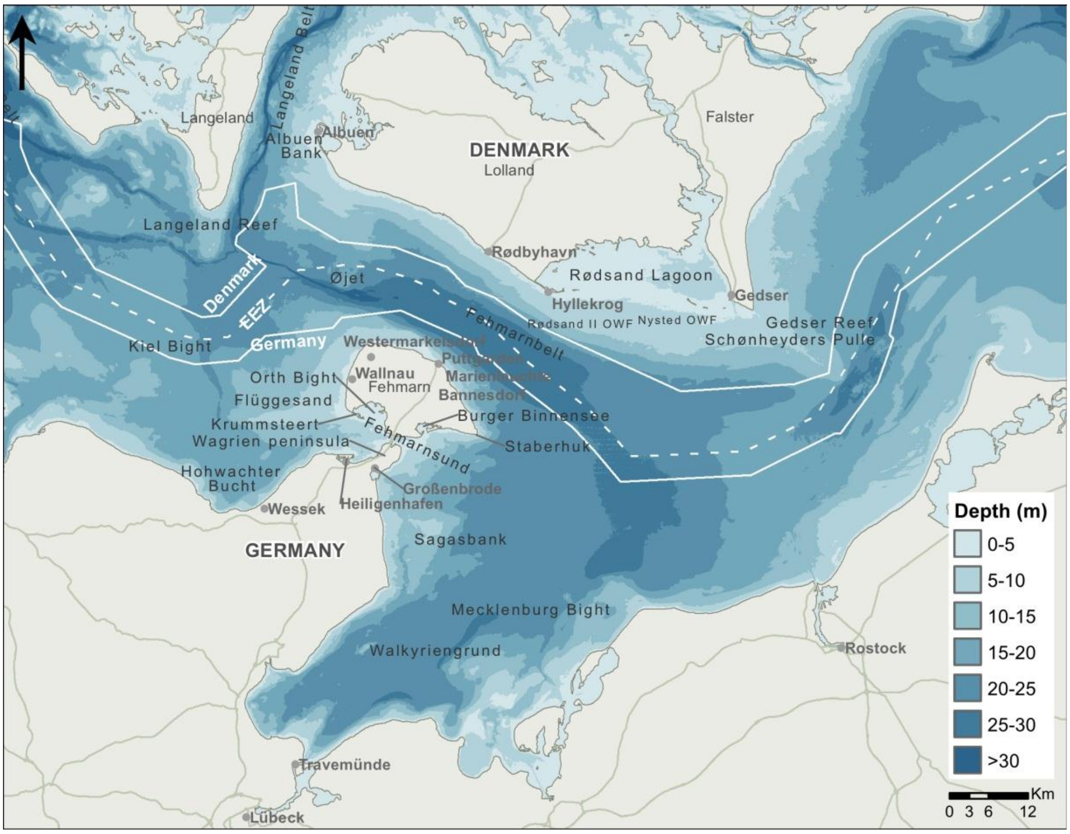

Fig.App.9- 1 Names of geographical locations used within the baseline descriptions.

A P P E N D I X   1 0

Summarised overview of the historical data

1. Summarised overview of Historical Data

The Fehmarnbelt is the connection between the Kiel Bight in the West and the Mecklenburg Bight in the East. As a part of the Belt Sea (Baltic Sea basin between Denmark, Sweden and Germany), this area represents a dynamic region with highly variable environmental conditions. The largest inflow of salt water from the Kattegat (North Sea) in the north enters the Baltic Sea via the Great Belt and the Fehmarnbelt. Strong currents cause high fluctuations of temperature, salinity and oxygen. Long-term monitoring shows a high variability in the presence, abundance and biomass of macrozoobenthic species in the deepest parts (30 m) of the Belt (Wasmund et al. 2009, Zettler et al. 2008). In these environmental settings, only species which tolerate frequently varying living conditions are found. Previous work has shown that the benthic fauna of deeper waters in both the adjacent Mecklenburg and Kiel Bights and the Fehmarnbelt itself can be affected by aperiodic oxygen depletion (= occurring at irregular intervals and being of irregular length; e.g. (Weigelt 1986, Zettler et al. 2000).

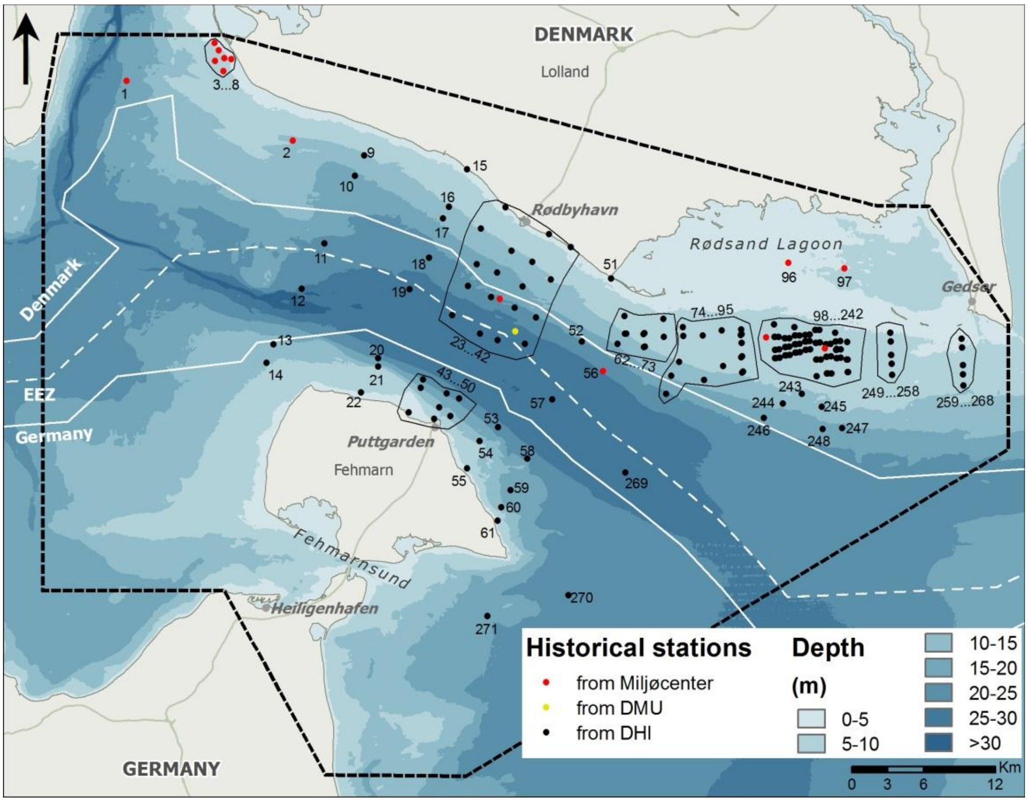

Fig.App.10- 1 Sample stations with historical data within the investigation area. The data types are abundance or biomass samples.

The main environmental concern in the Baltic Sea in general, and in the Belt Sea basin in particular, is oxygen depletion. The consequences of oxygen depletion events can be clearly observed in fauna data, where sharp declines of standing stocks occur. In the historical data, a rather consistent population decline could be observed in the shallow areas, stressing the fact that the shallow waters are a highly variable environment, with both seasonal and long-term dynamics. Also, the *Abra alba* community in the alignment area and eastern part is still under influence of aperiodic oxygen depletion, which could be shown in the MDS-plot (Fig.App.10-2) showing the trend of monitoring stations close to the alignment area. The anoxic event is also reflected in the population structure of *Arctica islandica*, where the number of specimens < 30 mm is very low. This pattern is virtually the same in the western and the eastern part of the Fehmarnbelt, indicating that some severe impact must have occurred within the last 15 years, either with the recruitment or mortality of the smaller size classes, probably as a result of an oxygen depletion event. A cross-check with the MDS-plot (Fig.App.10- 2) reveals that the last three severe oxygen-depletion events have been 1995, 2002 and 2008.

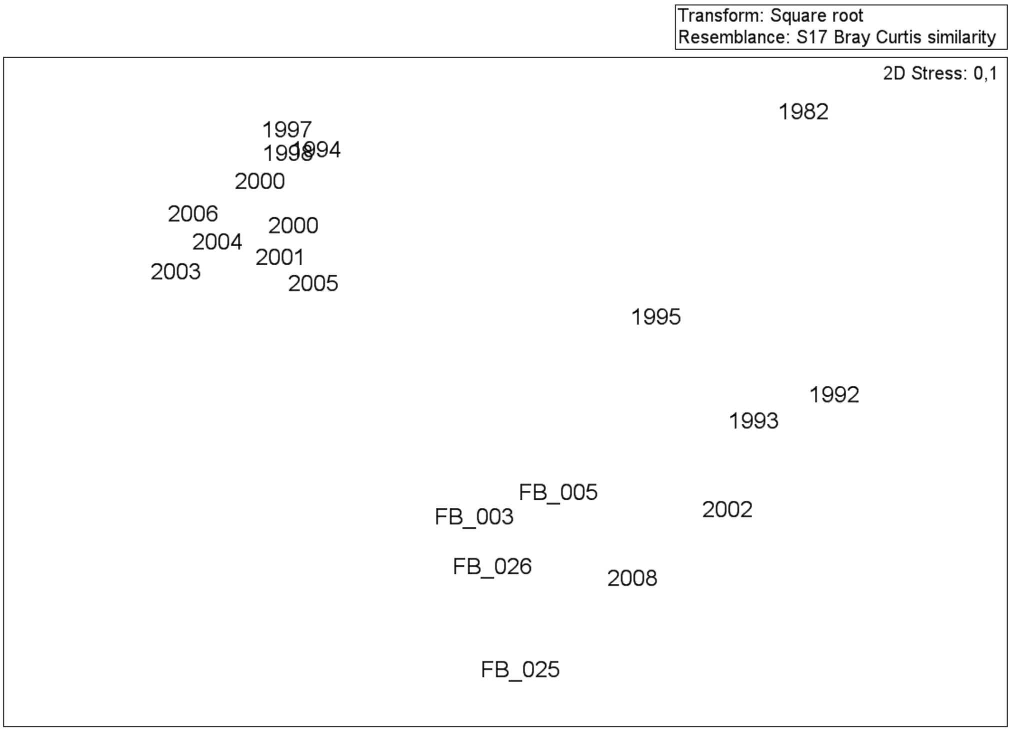

Fig.App.10- 2 *MDS-plot showing the yearly sampled monitoring station 010 (autumn sampling) and some neighboring baseline stations (autumn 2009 sampling). In the upper left corner is the group of 'years' (data points) representing the "normal" state of the community and on the right side single years with known oxygen depletion events. The baseline samples correspond to this loosely-aggregated group, indicating that Abra alba community in the alignment area was under influence of oxygen depletion in 2009.*

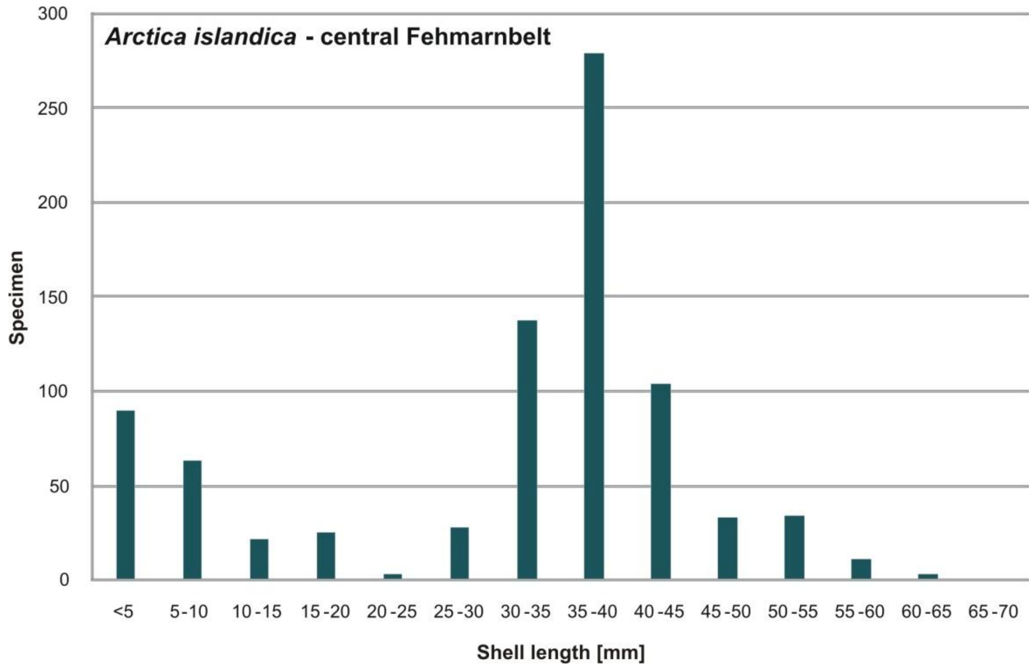

Fig.App.10- 3 Shell-length distribution frequency plot for Arctica islandica *for the central Fehmarnbelt, summarized over all campaigns.*

In summary, the information originating from historical time series shows that they can be used in consolidating the baseline status with additional biotic data.

Data on benthic macrofauna in the Fehmarnbelt area exist from the Fehmarnbelt Fixed Link Feasibility Study (COWI, 1999), Danish and German national monitoring programmes as well as monitoring programmes within an international framework such as HELCOM, EU Habitats Directive and the Water Framework Directive (WFD). Also, information on benthic macrofauna exists in the environmental impact assessments (EIA) on offshore wind farms in the area of the Lagoon of Rødsand, the so-called Nysted Offshore Windfarm (OWF) and the Rødsand II OWF. A detailed summary of the data originating from each of these sources is given below.

HELCOM-Monitoring (Germany)

A historical data set is available from the long-term HELCOM-monitoring station in the centre of the Fehmarnbelt at a depth of about 30 m. The data go back to the beginning of the 1980s and are representative for the deepest parts of the Fehmarnbelt area, where in the last decades several oxygen depletion events took place.

The community in the central Fehmarnbelt is usually dominated by three species (up to 80% of relative abundance). These are the bivalves *Abra alba* and *Arctica islandica* and the cumacean *Diastylis rathkei* (Zettler et al. 2008). The species number ranged between 20 and 65 per sampling event with high variability in both abundance and biomass. Due to low oxygen levels observed in 2002 and 2008, both the species richness and the abundance decreased dramatically (Fig.App.10-4), updated after (Zettler et al. 2008).

Due to the favourable, polyhaline salinity conditions (salinity 15–23 psu), the Fehmarnbelt area is for many marine species the only distribution area in the Baltic Sea, since they cannot tolerate lower salinities. Literature data (e.g. Kock 2001, Zettler et al. 2000, Zettler et al. 2006, Zettler & Gosselck 2006), and unpublished results show that the Fehmarnbelt area has a potential macrozoobenthic inventory of about 300 species. The Fehmarnbelt properand especially the slopes of the trench and the deep water plateaus (Øjet) in the western Fehmarnbelt are adequate for highly biodiverse macrozoobenthic and macrophytobenthic communities. Several species (approx. 40) belong to the German Red List. The rocky habitats and the beds of red and brown algae especially form suitable living conditions for many sensitive species. The proximity of the Great Belt and its inflow from the Kattegat area cause a relatively regular supply of salt- and oxygen-rich water (at least in the medium water depth between 12 and 22 m).

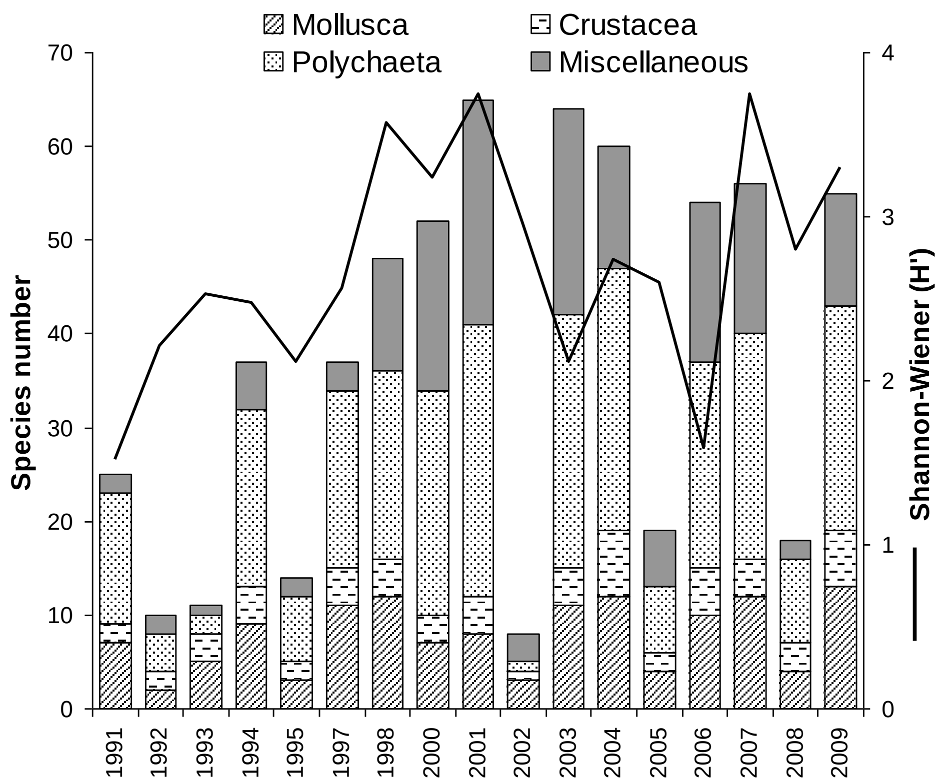

Fig.App.10- 4 Development of species number (bars) per group and the Shannon diversity index H’ *(black solid line) at the monitoring station 010 in the deepest part of the Fehmarnbelt during the last 19 years (updated after Zettler et al. 2008).*

In the years 1998 to 2004, a benthic survey was conducted for the Landesamt für Natur und Umwelt (LANU Schleswig-Holstein, now LLUR) as part of the HELCOM BSPA monitoring programme (Baltic Sea Protected Areas). The samples were located in transects at 2, 4, 6, 8, and 10 m water depth, respectively, and consist of 3 frame samples per depth. The samples within this program are outlined in Tab.App.10- 1. The transects Heiligenhafen and Wessek are located far from the Fixed Link alignment area, but may be useful as additional reference material.

Tab.App.10- 1 Transects of the BSPA monitoring programme (HELCOM) that are located in the area of interest within Fehmarnbelt.

Transect	Sample years
Fehmarn West 1	2000
Fehmanr West 2	2000
Heiligenhafen	2001–2002
Wessek	2001

The deep part of the Heiligenhafen transect (8 and 10 m) was dominated by oligochaetes, *Mytilus edulis* and the associated fauna. Up to 50 species were observed, while a macroalgal community dominated the area around 6 m depth. The shallow part (2 and 4 m) was sandy and dominated by species which are adapted to a high degree of exposure (e.g. the amphipod *Bathyporeia*).

The deeper Wessek transect (6, 8, and 10 m) was characterized by a mixture of soft-bottom and Mytilus communities while the shallow part (2 and 4 m) had similar exposed sand communities as the Heiligenhafen transect. These communities are comparable to what can be found on the Fehmarn coast under similar environmental conditions.

The transects Fehmarn West 1 and Fehmarn West 2 are located near the baseline transects Fe-W08 and FeR-W09 and can be used to complement the findings of the baseline.

From 1996 to 2003, LANU carried out a regular yearly monitoring programme along the Baltic coast of Schleswig-Holstein. On the Fehmarn coast, the station "Fehmarn Ost" near Staberhuk was sampled each year in 2, 4, 6, 8, and 10 m depth with 3 frame samples in each depth. The data from these samplings are the only time series from Fehmarn in the shallow water and give a good estimation of the character and distribution of the benthic communities.

Most of the time, the mud snail *Hydrobia ulvae* dominates the soft bottom communities in terms of abundance. When *Mytilus edulis* is present and the dominating species, a rich associated fauna is present. Where present, algae and eelgrass always contribute to higher species richness.

EU Habitats Directive monitoring (Germany)
Another important study within the Fehmarnbelt area was conducted as a status quo survey of the Natura 2000 site in the German EEZ and adjacent habitats (Zettler et al. 2006, Zettler and Gosselck 2006).

Altogether 150 grab and 50 dredge samples at 26 stations between 2003 and 2004 were analysed, in which more than 240 taxa were observed (Fig.App.10- 5).

During the investigations the Fehmarnbelt proved to be highly biodiverse: The polychaetes were the most species-rich category, with 76 species. In the soft bottom, the endobenthic *Ampharete baltica*, *Aricidea suecica*, *Heteromastus filiformis*, *Dipolydora quadrilobata*, *Scoloplos armiger* and *Spio goniocephala* showed highest presence and abundance. More linked to rocky substrates and/or macrophytes, the bristle worms *Flabelligera affinis*, *Lepidonotus squamatus*, *Eulalia bilineata* and *Nereimyra punctata* were found.

The second largest group were the molluscs. Endobenthic bivalves dominated (mainly the biomass) in sandy substrates. Some examples are *Abra alba*, *Arctica islandica*, *Astarte borealis*, *Corbula gibba*, *Macoma calcarea*, *Mya arenaria* and *Parvicardium ovale*.

Hard bottom or plants were frequently colonized by epibenthic bivalves and gastropods like *Buccinum undatum*, *Facelina bostoniensis*, *Hiatella arctica*, *Lacuna pallidula*, *Mytilus edulis*, *Modiolus modiolus*, *Onoba semicostata* and *Retusa truncatula*. Bivalves of the genus *Musculus* were found growing within sponges and ascidians. In addition, the introduced North American bivalve species *Ensis directus* has stable populations in the coarse sand sediments. Within the Fehmarnbelt area, the species lives at the margin of its salinity tolerance.

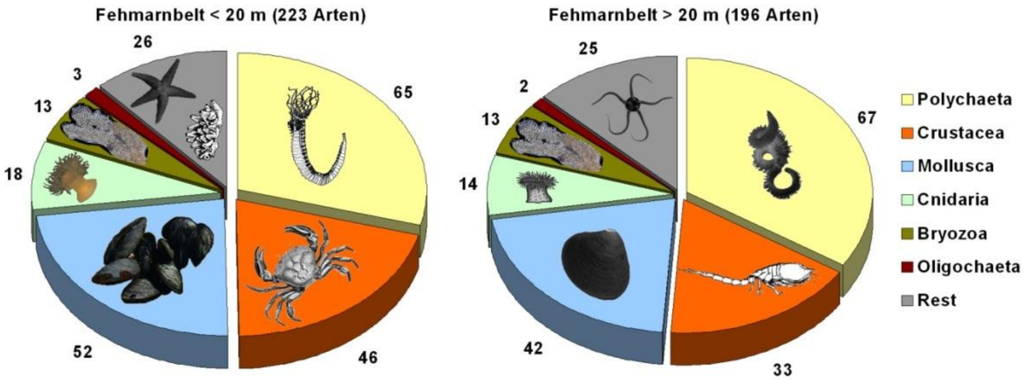

Fig.App.10- 5 Species composition at the Fehmarnbelt area between 2003 and 2004 in two different depth zones. Altogether 241 taxa were found (figure from Zettler et al. 2006).

The third largest category were the crustaceans (Fig.App.10- 5). 49 species were determined in the Fehmarnbelt area, of which the amphipods composed the main part. *Apherusa bispinosa*, *Caprella septentrionalis*, *Corophium insidiosum*, *Gammarellus homari*, and *Microdeutopus gryllotalpa* were characteristic among the algae and rocky substrates.

In exposed and well-sorted sandy sediments, the amphipods *Phoxocephalus holbolli*, *Bathyporeia pilosa*, *B. guilliamsoniana*, the mysid *Gastrosaccus spinifer* and the decapod *Crangon crangon* were common. Other groups at the Fehmarnbelt area were the mostly epibenthic sponges, hydrozoans, bryozoans, echinoderms and ascidians (Fig.App.10- 5).

Fehmarnbelt Fixed Link Feasibility Study

For the Feasibility Study (COWI, 1999) samples of the benthic macrofauna were collected at 60 stations in the Fehmarnbelt area. The sampling stations were located along transects parallel to and with increasing distance from the planned Fixed Link alignment between Rødbyhavn and Puttgarden and were sampled in January 1997. Because of practical constraints (depth), three different types of sampling equipment were used, causing the data to be analysed in three different depth-ranges: > 20 m ("deep" stations), 10–20 m ("intermediate" stations) and < 6 m ("shallow" stations).

The most abundant species at > 20 m depth were the polychaetes *Terebellides stroemi*, *Scoloplos armiger*, *Lagis koreni*, the bivalves *Abra alba*, *Arctica islandica*, and *Kurtiella bidentata* and the crustacean *Diastylis rathkei*. The dominant species belong to the traditional Abra alba community.

The deep stations were subdivided into two clusters (excluding two stations with very low abundance), attributable to the difference in dominant species: *Abra alba* / *Arctica islandica* for one cluster and *Kurtiella bidentata* / *Terebellides stroemi* for the second cluster. The division of the deep water samples in two main clusters could be largely explained by the variables water depth and a combination of water depth and sediment organic content (loss on ignition; LOI).

Polychaetes, bivalves and gastropods were the dominant components of the bottom fauna at water depths between 10–20 m in Fehmarnbelt. The dominant species were the mud snail *Hydrobia* sp., the bivalves *Mytilus edulis*, *Macoma balthica* and the polychaete *Lagis koreni*. The dominant species of bivalves and gastropods represent the traditional Macoma community at stations located along the Danish coast in water of ca. 12 m deep.

The stations located at around 20 m deep in the Fehmarnbelt were predominantly represented by the typical Abra alba community, whereas the stations located at intermediate depths (approx. 15 m deep) along both the Danish and the German coasts are characterised by species from both the Macoma and the Abra alba communities.

Nysted Offshore Wind Farm
The diversity of the bottom fauna within and around the Nysted OWF is medium to low. The total number of species recorded in the wind farm and along reference transects outside the wind farm are 39 species and 36 species, respectively.

Polychaetes and crustaceans are the most diverse taxonomic groups, and together they account for about 70% of the total number of species recorded in the area. The diversity of the bottom fauna measured as the average number of species, the total number of species and the overall taxonomic composition of the bottom fauna have remained almost unchanged in the wind farm. In contrast, the number of species per station and the total number of species have increased along the transects outside the wind farm between 1999 and 2001. The mean abundance of the bottom fauna has declined by about 30% in the wind farm between 1999 and 2001, whereas along the reference transects the percentage of stations with a low abundance increased between 1999 and 2001.

Rødsand II Offshore Wind farm
The benthic macrofauna southeast of the preferred site of Rødsand II and south of Nysted OWF changes gradually with increasing depth from a Macoma community at the shallow stations to an Abra community at the deepest station.

The similarity of the Macoma community in the preferred site of Rødsand II and most of the alternative area vary due to different predominance of characteristic species, e.g. *Mytilus edulis* in the western section of the Rødsand II area, mud snails (*Hydrobia* sp.) and polychaetes (*Pygospio elegans*) in the shallow middle section of the Rødsand II area and in 10-15m depth in the alternative area. The benthic fauna in the shallow middle section of the Rødsand II area and Nysted OWF area is similar. However, the benthic macrofauna in the remaining part of the Rødsand II area and in the alternative area was significantly different from the benthic fauna in the present Nysted OWF in 2005.

With the exception of the high average biomass in the western section of the Rødsand II area (due to the predominance of Blue Mussels), both the total abundance and biomass of the Macoma community in 2006 has remained around the low values found in the Nysted OWF area in 2005.

Danish national monitoring
For comparison with shallow water data on the Danish side (within the framework of the planned operations for the Fehmarnbelt Fixed Link), the historical data recorded from the Lolland south-west coast (Albuen Bank) are most interesting. These represent data sampled between depths of 5 and 7.5 m.

Both in terms of abundance as well as biomass the Blue Mussel *Mytilus edulis* was the dominant species in any of the sampled stations along the Lolland South-west coast. The other bivalves found at the stations were *Macoma balthica* and *Mya arenaria*.

Polychaetes were represented with eleven species, but were dominated by the small, gregarious tube-building worm *Pygospio elegans* and, to a lesser extent, by the common, omnivorous and highly mobile gallery-burrowing polychaete *Hediste diversicolor*. Oligochaete worms were present in relatively high abundances, but as these animals are small, the biomass they contribute to the whole is small.

Gastropods were represented mainly by small mud snails *Hydrobia*. The other gastropods recorded were the rocky substrate- and macroalgae-associated periwinkles *Littorina littorea* and *Littorina saxatilis*. Crustaceans were mainly represented by amphipods of the genus *Gammarus* and to a lesser degree by the isopods *Jaera albifrons*.

The historical data recorded at the Southern coast of Lolland have been collected from just one station in the period 1987–1992 (except in 1991) during spring or early summer (April–June). The highest overall biological parameter values (abundance, biomass, number of species) were recorded in the years 1987 and especially 1988, afterwards total density and biomass decreased significantly. Overall, 1990 was the year with the lowest density and biomass records for this station. The peak values in abundance and biomass and subsequent decline and fluctuations are characteristic for the entire benthic community, and suggest the occurrence of an anoxic event typical for the Baltic Sea.

Two stations located in the deeper part of the Fehmarnbelt have been sampled in April–May during the period 1987–1992, and once in March 2004 (one station). These results were very similar to that of the Fixed Link Feasibility Study and the long-term data of the monitoring station in the centre of the Fehmarnbelt (see above).

The benthic assemblages in these two deeper stations in the central Fehmarnbelt are almost exclusively dominated by bivalves. In 1987 at station 2, *Arctica islandica* made up the largest part, both in terms of abundance and in biomass, followed by *Macoma balthica*, *Astarte montagui*, *Mytilus edulis* and *Kurtiella bidentata*. Together with all bivalves, *Macoma balthica* and *Mytilus edulis* densities experienced a considerable increase between 1987 and 1988, but declined again during the following years. There was no coinciding increase of sea star *Asterias rubens*, which could have explained the dramatic decrease in mussel density.

A P P E N D I X 1 1

Detailed description of Ring Test methodology and results

First ring test – field samples
Each of the three laboratories collected 3 samples in the field, processed one of them while the other 2 were processed by the remaining laboratories. This made it possible to compare the sorting efficiency qualitatively. A quantitative comparison was not possible because of the intrinsic variability within the field samples.

The result of the test revealed a generally good accordance between the number of species and the abundance found in the 3 samples of a set. Due to the natural variance between the samples of a set, it is not possible to define a threshold for the acceptance of found differences. This was especially the purpose of the second ring test. Therefore, no numbers are given here.

Second ring test – determination of uncommon species
The identification of mostly uncommon species was done by sending pre-determined specimens of 40 species from one laboratory out to the other two laboratories. The results of the determinations were then compared.

The test resulted in an overall good comparability. Deviation between the three laboratories on the exact identification was found to be minor, ranging between 2 and up to 5, in most cases 3 of the 40 selected species. The differences affected only a small group of the species. The important genera were: *Pholoe*, *Cauleriella*, *Chaetozone*, *Phyllodoce*, *Idotea*, *Dipolydora*, and *Eumida*. Apart from *Idotea*, all other genera are polychaetes. The differences were discussed and resolved by identifying misinterpretations from determination keys and also difficult specimens lacking some of the necessary determination features. The results were documented and used as the basis for the determination of all baseline material.

The test concluded that the degree of harmonization with respect to identification of selected species is acceptable and within the normal range of uncertainty for species determination. The found differences were used to further improve the quality of the collected data by removing different interpretations of species identification.

Third ring test – sorting efficiency
A set of artificial samples was prepared using sterilized sediment charged with exactly determined and counted numbers of specimens (15 different species), taken from existing sample material. The number of specimens ranged from 2 to 184 in order to simulate abundant and rare species as they occur in field samples. This test focused on sorting and not on determination, so only common species were chosen. It was made sure that also very small specimens were contained in the samples, because these normally cause the major differences in sorting efficiency.

The result showed a comparable sorting efficiency for all three laboratories. All laboratories found and determined all 15 species correctly. No additional species was found. For 5 of the 15 species, the expected number of specimens was found by all laboratories. Differences of 1 specimen occurred for 8 species (1 specimen overlooked), differences of 2 specimens occurred for 2 species (2 specimens overlooked). Larger differences only occurred for 3 species. One of these (*Calliopius laeviusculus*) consisted of very small specimens that were about the size of the sieve mesh. It is very likely that the missing animals just passed the sieve and were not actually overlooked. This is a general problem for species that have body sizes above the mesh size in one dimension and are considerably smaller in the other dimension (e.g. polychaetes or amphipods). These always tend to pass through a sieve that has a mesh size smaller than the longer dimension of the animal and are therefore most often generally underestimated.

The absolute numbers in miscounts as given above are often not relevant for the result of the data analysis, since it depends on the total number of specimens found. The relative amount of the miscounts stayed below 10% of the total number of specimens in all cases except for *Calliopius laeviusculus* for the reasons stated above. This is a typical number found during sample analysis and will not affect the comparability and reliability of the data obtained from the field samples.

A P P E N D I X   1 2

Detailed description of Sampling Method Comparison (Frame and Grab) and results

Comparison material

The comparison material was taken at one singular location where the sediment was mostly homogeneous and uniform with respect to grain size and structure. No vegetation was nearby that could result in a patchy occurrence of species unrelated to the infauna community at the comparison location. In calm weather 10 samples were first taken with a grab (named G-A to G-J) and subsequently 10 samples with a sampling frame (named R-A to R-J). All samples were processed identically from that point.

Data analysis

The taxonomic composition of the two sets of samples was evaluated using an MDS analysis based on Bray-Curtis similarity (Clarke 1993, Clarke and Warwick 2001) incorporating taxa counts and abundance. 2nd root transformed abundances were used to minimise the effect of very abundant species. The result shows a group of samples in the upper left corner and 4 samples outside the group: the grab samples G-F, G-I, and G-J, and the frame sample R-B (Figure 1, Appendix 12).

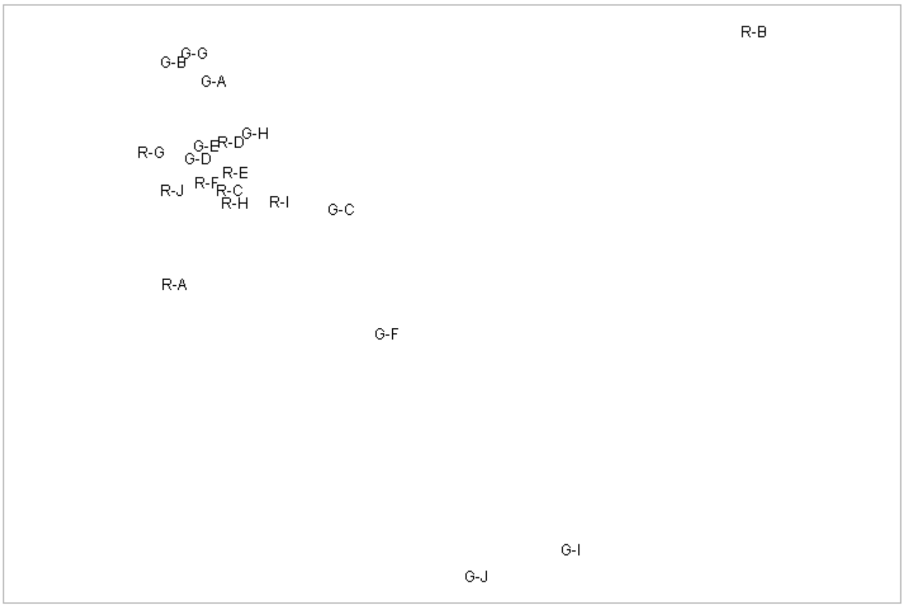

Fig.App.12- 1 MDS analysis of all 20 samples in the method comparison using Bray-Curtis similarity and 2nd root transformed abundances. Grab samples are G-A to G-J, frame samples are R-A to R-J.

A comparable result is found when the abundance is used without transformation. Overall, the two sample set give a similar composition that would result in assigning them to the same benthic community in a community analysis. The reason, that 4 of the samples are separate from this group, can be found looking at the actual sample data. Frame sample R-B has the smallest number of taxa (11) and also the lowest number of individuals (144) of all 20 samples. It therefore lacks several of the taxa found in the other samples and is thus less comparable. The grab samples G-F, G-I, and G-J all have numbers of individuals, that are below the mean. At the same time, grab replicates G-F and G-I have the highest number of species (31 and 24 respectively) among the 20 samples. Like in the frame sample R-B, this leads to a lower degree of comparability.

In grabs G-F, G-I, and partly also G-J, about half of the taxa found are represented with one individual only (singletons). In the other grabs, only about a quarter of the taxa are singletons. These singletons have a large influence on the similarity compared to the other grabs and thus cause these samples to occur apart from the main grouping in the MDS. In addition, these grab sample have the highest relative abundance of *Mytilus edulis* (G-I has 27 %; 201 of 743 individuals) and contain many species that can be regarded as associated (epi)fauna to *Mytilus edulis*. This results in a different community and is also the reason for the highest number of species (34) found in this sample. This shows the principal difference in the two methods rather than a different sampling performance. The diver is able to place the sampling frame in the desired habitat (a clean soft bottom in this case) in order to sample the infauna community. The grab sampling is done with no visual aid and thus in some cases also samples additional epifauna.

The most common species in the samples is *Hydrobia ulvae*. In the frame samples, it amounts to around 85 % of all individuals in the samples. In the grab samples, the value is lower, amounting to around 75 %. This difference is probably due to the procedure that grab samples are taken. The grab is lowered to the sea floor slowly but it cannot totally be avoided that there is a surge of water in front of the grab blowing away some specimens. Here, the found numbers show a difference in method performance. As the MDS shows, this difference does not result in a different grouping of frame and grab samples due to the fact that *Hydrobia ulvae* is the dominant species and 85 or 75% relative abundance is irrelevant within the natural variability.

In addition to these findings, specific species found in the samples contribute to the differences in the communities. In general, there is a larger number of species only found in one out of 10 grabs/frames (singletons). The taxa listed in Table 1, Appendix 12 occurred only in one of the 10 grabs or frames and with one individual.

Tab.App.12- 1 Taxa found in the method comparison that were only found once within the 10 grab or 10 frame samples (singletons). The x indicates where the taxa were found.

Taxon	Frame	Grab
Arctica islandica		x
Corophium volutator	x	x
Gammarus oceanicus		x
Musculus discors	x	x
Nicolea zostericola		x
Phaxas pellucidus		x
Pholoe inornata		x
Phtisica marina		x
Porifera		x
Spio goniocephala	x	x
Ampharete balthica	x	
Arenicola marina	x	x
Balanus improvisus	x	
Corophium insidiosum	x	x
Ericthonius brasiliensis	x	x
Harmothoe imbricata	x	x
Hediste diversicolor	x	x
Pariambus typicus	x	
Pusillina inconspicua	x	x

Ten taxa of the 61 found in total are unique to one of the 20 samples. This amounts to 16% of all found taxa and is contributing to the dissimilarity in the samples.

Comparing the number of species and number of individuals found in total within the 20 samples, a difference can be seen. The median number of species is 23 for the frame samples and 26 for the grab samples. The median number of individuals is 1483 for the frame and 1133 for the grab. So while the grab catches more species, the frame gets higher abundances. With the knowledge of the underlying structure of the data, it is possible to restrict this analysis to the samples within the same MDS group, actually removing the samples R-B, G-F, G-I, and G-J from the data set. Then, the median number of species is 23 for the frame and 25 for the grab, the median number of individuals is 1483 for the frame and 1325 for the grab. Thus, correcting the raw numbers for the known outliers, the two data sets are closer together, but still retain the same tendency for the difference. Using a Kruskal-Wallis rank sum test on the reduced dataset, the chance of inferring a difference for the number of species although there is none, amounts to 1.2% (significant). The chance to infer a difference for the number of individuals although there is none, amounts to 11.2% (not significant). From these numbers, however, it cannot be inferred how probable it actually is, that there is a true difference in the methods.

From the MDS and taxonomic analysis above, it can be seen that no methodological differences exist that affect the outcome or comparability of the baseline analyses. It is rather the difference in the community composition of the samples causing different outcomes, and this is the desired effect.

Table of figures

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