Supplement text 1:

Porewater geochemistry

Immediately after recovery and transfer of the push cores to *in situ* temperature of 4 °C, pH of every centimetre sediment depth was determined with punch-in electrodes on undisturbed sediment cores. Porewater analyses of phosphate and iron (Fe²⁺) were carried out on board. For the analyses of dissolved iron (Fe²⁺) porewater subsamples of 1 ml were immediately complexed with 50 μ l of "Ferrospectral" and determined photometrically. A photometric procedure was used to determine the concentration of phosphate in extracted porewater subsamples. Aliquots of the porewater were diluted 1:10 and acidified with HNO_{3 (suprapure)} for the determination of manganese concentration by Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES) and Atomic absorption Spectroscopy (AAS) in the home laboratory.

Elevated alkalinity values were detected at all sites where also enhanced AOM activity was measured, indicating potential variation in the seepage between sites (Fig. 3). At these sites alkalinity increased with depth to reach maximum values of 47 and 49 mM in the deepest investigated horizons at the Mussel_S and Bacter_N sites, respectively (Fig.3). Highest alkalinity flux of 0.4 mmol m⁻² d⁻¹ was detected at the Mussel_S and the Bacter_N sites. Near background (2.5 mM) values were detected at the Clam_S_Env, Clam_SW, Clam_SW_Env. The iron profiles matched well the sulphide depth pattern, with elevated concentrations detected at the clam habitats where free sulphide was absent from the topmost surface layers (Supplement Fig. 1).



Supplement Fig. 1 Geochemical depth profiles of pH, PO₄, Cl, Fe and Mn at all investigated sites at REGAB. Closed symbols denote measurements taken within the patches/bacterial mat, and open symbols denote measurements taken at the respective bare sediments.



Supplement Fig. 2 Geochemical depth profiles of alkalinity, anaerobic oxidation of methane (AOM) and sulphate reduction (SR) rates, as well as single cell numbers measured at the different habitats at REGAB. Closed symbols denote measurements taken within the patches/bacterial mat, and open symbols denote measurements taken at the respective bare sediments.



Supplement Fig. 3 *In situ* benthic chamber incubations of oxygen (black line) and methane concentrations (squares) at the different habitats at REGAB. The concentration gradient from which the total oxygen uptake was calculated (see Table 2) is depicted with a red dashed line.



Supplement Fig. 4 *In situ* microsensor measurements of the sediment oxygen concentrations (μM) at different soft-bottom habitats at REGAB. At each measurement site, the microprofiler was equipped with 2 - 3 oxygen microsensors (here depicted with different colors) for simultaneous measurement of the oxygen concentration.

Supplement Table 1 Overview of the samples and measurements acquired at REGAB during M76/3b, with their PANGAEA reference numbers. All data has been deposited and is available online in the PANGAEA database (www.pangaea.de).

$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Location	Sampling site	Measurement; Sample	Pangaea Event Label
Bacter_N (Bacterial mat) Porewater pH M76/3b_310_PUC28; M76/3b_310_PUC32 M76/3b_310_PUC28; M76/3b_310_PUC32 M76/3b_310_PUC23; M76/3b_310_PUC13; M76/3b_310_PUC12 MCP M76/3b_312_PUC27; M76/3b_310_PUC13; M76/3b_310_PUC12 MCP M76/3b_312_PUC27; M76/3b_310_PUC23; M76/3b_310_PUC13; M76/3b_310_PUC12 MCP M76/3b_312_PUC27; M76/3b_312_PUC23; M76/3b_312_PUC23; M76/3b_312_PUC7; Outside bacterial mat) PH M76/3b_322_PUC14 MREGAB Porewater M76/3b_322_PUC14 Clam_N (Clam_patch) DNA M76/3b_323_PUC15 PH M76/3b_323_PUC29 Porewater M76/3b_332_PUC23; M76/3b_332_PUC29; M76/3b_332_PUC24; M76/3b_334_PUC23; M76/3b_334_PUC23; M76/3b_334_PUC26; M76/3b_344_PUC25; M76/3b_344_PUC26; M76/3b_344_PUC25; M76/3b_344_PUC26; M76/3b_34			DNA	M76/3b 310 PUC13; M76/3b 310 PUC27
Batter J.N (Bacterial mat) pH AOM; SR M16/3b_310_PUC27; M76/3b_310_PUC13; M76/3b_310_PUC12 M1CP N REGAB Bacter_N_Env (Outside bacterial mat) Procewater PI M76/3b_312_PUC3 N REGAB Clam_N (Clam_patch) Porewater PI M76/3b_312_PUC34 ONA M76/3b_312_PUC22; M76/3b_312_PUC23; M76/3b_312_PUC7; DNA M76/3b_323_PUC14 Cham_N (Clam_N (Clam_patch) Porewater M76/3b_323_PUC30 AOM; SR M76/3b_323_PUC28; M76/3b_323_PUC31; M76/3b_323_PUC14; M76/3b_323_PUC14; M76/3b_323_PUC12 CHAM M76/3b_332_PUC29 VCam_N (Outside clam patch) PH M76/3b_332_PUC29 Prewater M76/3b_332_PUC20 M76/3b_332_PUC29; M76/3b_332_PUC29; M76/3b_332_PUC34 Mussel_S (Mussel patch) DNA M76/3b_332_PUC20 Mussel_S (Mussel patch) DNA M76/3b_344_PUC23 Porewater M76/3b_344_PUC23; M76/3b_344_PUC28; M76/3b_344_PUC15 M76/3b_344_PUC23; M76/3b_344_PUC28; M76/3b_344_PUC28; M76/3b_344_PUC15 Mussel_S (Outside massel patch) DNA M76/3b_361_PUC16 M76/3b_361_PUC16 Mussel_S Env (Outside massel patch) DNA M76/3b_361_PUC23; M76/3b_361_PUC15 M76/3b_361_PUC16 Mussel_S Env (Outside massel pat		Destar N	Porewater	M76/3b 310 PUC28; M76/3b 310 PUC32
$\begin{tabular}{ c c c c c c c c c c c c c $		Bacter_N	pН	M76/3b 310 PUC8
MICP M76/3b_312_MICP1 DNA M76/3b_312_PUC7 Porewater M76/3b_312_PUC15 (Outside bacterial mat) PH M76/3b_312_PUC22; M76/3b_312_PUC23; M76/3b_312_PUC7; DNA M76/3b_323_PUC14 Clam_N Porewater PI M76/3b_323_PUC14 Porewater M76/3b_323_PUC23; M76/3b_312_PUC23; M76/3b_312_PUC7; MCP Porewater M76/3b_323_PUC24 M76/3b_323_PUC30 AOM; SR M76/3b_323_PUC209 Porewater M76/3b_332_PUC29 Porewater M76/3b_332_PUC29 Porewater M76/3b_332_PUC29 Porewater M76/3b_332_PUC23 PH M76/3b_332_PUC23 AOM; SR M76/3b_332_PUC23 MUSP Porewater M76/3b_332_PUC23 M76/3b_332_PUC29; M76/3b_332_PUC34 MICP M76/3b_344_PUC23 AOM; SR M76/3b_344_PUC23 Mussel_S PH Mussel_S_Env PH NA M76/3b_344_PUC23 AOM; SR M76/3b_361_PUC36		(Bacterial mat)	AOM; SR	M76/3b 310 PUC27; M76/3b 310 PUC13; M76/3b 310 PUC12
Bacter_N_Env (Outside bacterial mat) DNA M76/3b_312_PUC7 N REGAB Porewater M76/3b_312_PUC34 AOM; SR M76/3b_312_PUC23; M76/3b_312_PUC23; M76/3b_312_PUC7; DNA M76/3b_322_PUC23; M76/3b_312_PUC7; Outside bacterial mat) PH M76/3b_322_PUC23; M76/3b_312_PUC23; M76/3b_312_PUC7; Clam_N (Clam_patch) PNA M76/3b_322_PUC23; M76/3b_312_PUC23; M76/3b_323_PUC14; M76/3b_323_PUC12 CHAM M76/3b_322_PUC28; M76/3b_323_PUC31; M76/3b_323_PUC14; M76/3b_323_PUC12 CHAM M0K; SR M76/3b_332_PUC29 Porewater Porewater M76/3b_332_PUC20 AOM; SR MICP M76/3b_332_PUC20 AOM; SR MICP M76/3b_332_PUC23 M76/3b_332_PUC29; M76/3b_332_PUC34 MICP M76/3b_344_PUC23 Porewater Mussel_S (Mussel patch) PH M76/3b_344_PUC23 Porewater M76/3b_344_PUC23; M76/3b_344_PUC28; M76/3b_344_PUC28; M76/3b_344_PUC15 CHAM M76/3b_361_PUC14 PH M76/3b_361_PUC16 (Outside massel patch) PNA M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC13 AOM; SR			MICP	M76/3b 312 MICP1
Bacter_N_Env (Outside bacterial mat) Porewater pH M76/3b_312_PUC15 N REGAB AOM; SR M76/3b_312_PUC23, M76/3b_312_PUC23; M76/3b_312_PUC7; N REGAB Clam_N (Clam_N (Clam_patch) DNA M76/3b_323_PUC14 Porewater M76/3b_323_PUC28 M76/3b_323_PUC215 PH M76/3b_323_PUC28 M76/3b_323_PUC230 AOM; SR M76/3b_332_PUC29 AOM; SR Porewater M76/3b_332_PUC20 M76/3b_332_PUC204 Outside clam patch) DNA M76/3b_332_PUC20 AOM; SR M76/3b_332_PUC20 AOM; SR MICP M76/3b_332_PUC20 AOM; SR M76/3b_332_PUC20 AOM; SR M76/3b_332_PUC20 AOM; SR M76/3b_334_PUC23 Porewater M76/3b_344_PUC23 Porewater M76/3b_344_PUC23 Porewater M76/3b_344_PUC23 Porewater M76/3b_361_PUC23 Porewater M76/3b_361_PUC23 Porewater M76/3b_361_PUC23 Porewater M76/3b_361_PUC23 Porewater M76/3b_361_PUC14 <td< td=""><td rowspan="9">N REGAB</td><td></td><td>DNA</td><td>M76/3b 312 PUC7</td></td<>	N REGAB		DNA	M76/3b 312 PUC7
N REGAB (Outside bacterial nat) N REGAB pH (Outside bacterial nat) N (Clam_N (Clam_patch) DNA PH Porewater M76/3b_312_PUC23; M76/3b_312_PUC23; M76/3b_312_PUC7; M76/3b_323_PUC14 V RegAB Clam_N (Clam_patch) DNA PH M76/3b_323_PUC15 M76/3b_323_PUC14 V Clam_patch) PH PH M76/3b_323_PUC28; M76/3b_323_PUC31; M76/3b_323_PUC14; M76/3b_323_PUC12 CHAM DNA M76/3b_323_PUC29 M76/3b_323_PUC29 V Clam_N_Env (Outside clam patch) Porewater M76/3b_332_PUC29 Porewater M76/3b_332_PUC204 AOM; SR (Outside clam patch) PH PH M76/3b_332_PUC23; M76/3b_332_PUC29; M76/3b_332_PUC34 Mussel_S (Mussel_S PH PH M76/3b_335_MICP1 DNA M76/3b_335_MICP1 DNA M76/3b_344_PUC23 Porewater M76/3b_344_PUC23 Porewater M76/3b_344_PUC23; M76/3b_344_PUC23; M76/3b_344_PUC28; M76/3b_344_PUC15 CHAM M76/3b_361_PUC14 DNA M76/3b_361_PUC14 Porewater M76/3b_361_PUC15 CHAM M76/3b_361_PUC14 DNA M76/3b_361_PUC15 CHAM M76/3b_361_PUC14 PH M76/3b_361_PUC24 PORWater M76/3b_361_PUC24 <td>Bacter N Env</td> <td>Porewater</td> <td>M76/3b 312 PUC15</td>		Bacter N Env	Porewater	M76/3b 312 PUC15
N REGAB AOM; SR M76/3b_312_PUC22; M76/3b_312_PUC23; M76/3b_312_PUC7; N REGAB DNA M76/3b_323_PUC14 Clam_N (Clam patch) Porewater M76/3b_323_PUC28; M76/3b_323_PUC31; M76/3b_323_PUC14; M76/3b_323_PUC12 CHAM Morewater M76/3b_323_PUC28; M76/3b_323_PUC31; M76/3b_323_PUC14; M76/3b_323_PUC12 CHAM M76/3b_332_PUC29 Porewater M76/3b_332_PUC31 POrewater V(Outside clam patch) PORewater M76/3b_332_PUC20 Mussel_S MICP M76/3b_332_PUC20 Mussel_S PORewater M76/3b_332_PUC20 Mussel_S PORewater M76/3b_332_PUC20 Mussel_S PORewater M76/3b_344_PUC20 Mussel_S PORewater M76/3b_344_PUC23 PORewater M76/3b_344_PUC23 PORewater Mussel_S_E_Env PH M76/3b_361_PUC36 Porewater M76/3b_361_PUC36 POREwater PORewater M76/3b_361_PUC36 PORewater M76/3b_361_PUC36 PORewater M76/3b_361_PUC36 POREwater M76/3b_361_PUC36 POREwater M76/3b_361_PUC36 <td rowspan="2">(Outside bacterial mat)</td> <td>nH</td> <td>M76/3b 312 PUC34</td>		(Outside bacterial mat)	nH	M76/3b 312 PUC34
N REGAB DNA M76/3b_323_PUC14 Clam_N (Clam patch) Porewater M76/3b_323_PUC23 AOM; SR M76/3b_323_PUC28; M76/3b_323_PUC31; M76/3b_323_PUC14; M76/3b_323_PUC12 CHAM M76/3b_323_PUC29; M76/3b_323_PUC21; M76/3b_323_PUC14; M76/3b_323_PUC12 CHAM M76/3b_332_PUC23; M76/3b_332_PUC29; M76/3b_332_PUC29; M76/3b_332_PUC29; M76/3b_332_PUC29; M76/3b_332_PUC29; M76/3b_332_PUC29; M76/3b_332_PUC34 Mussel_S PH M76/3b_332_PUC20 Mussel_S POrewater M76/3b_332_PUC23; M76/3b_332_PUC29; M76/3b_332_PUC34 Mussel_S Porewater M76/3b_344_PUC23 Porewater M76/3b_344_PUC20 AOM; SR M76/3b_344_PUC20 AOM; SR M76/3b_344_PUC23 Porewater M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC14 PH M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC36 Proewater M76/3b_361_PUC36 POrewater M76/3b_361_PUC14 PH M76/3b_361_PUC36 DNA M76/3b_361_PUC36			AOM: SR	M76/3b 312 PUC22 M76/3b 312 PUC23 M76/3b 312 PUC7
Clam_N (Clam patch) Drive more more more more more more more mor			DNA	M76/3b 323 PUC14
$S REGAB = \frac{Clam_N}{(Clam patch)} = \frac{N10350_{223} PUC13}{PUC30} = \frac{N10350_{223} PUC23}{PUC230} = \frac{N76/3b_{323} PUC31}{AOM; SR} = \frac{N76/3b_{323} PUC31}{M76/3b_{332} PUC31}; M76/3b_{332} PUC14; M76/3b_{332} PUC12 \\ CHAM = M76/3b_{332} PUC29 \\ Porewater = M76/3b_{332} PUC29 \\ Porewater = M76/3b_{332} PUC20 \\ AOM; SR = M76/3b_{332} PUC23; M76/3b_{332} PUC29; M76/3b_{332} PUC34 \\ MICP = M76/3b_{332} PUC20 \\ AOM; SR = M76/3b_{332} PUC20 \\ AOM; SR = M76/3b_{333} MICP1 \\ DNA = M76/3b_{334} PUC23 \\ Porewater = M76/3b_{344} PUC23 \\ POREWATE = M76/3b_{344} PUC36 \\ POREWATE = M76/3b_{344} PUC36 \\ POREWATE = M76/3b_{344} PUC31 \\ POREWATE = M76/3b_{344} PUC3$			Porewater	M76/3b 323_PUC15
(Clam patch) print mr0305_1210230 AOM; SR M76/3b_323_PUC28; M76/3b_323_PUC31; M76/3b_323_PUC14; M76/3b_323_PUC12 CHAM M76/3b_325_CHAM1 DNA M76/3b_332_PUC29 Porewater M76/3b_332_PUC23; M76/3b_332_PUC29; M76/3b_332_PUC34 MUSsel_S pH Mussel_S M76/3b_335_MICP1 DNA M76/3b_334_PUC23 Porewater M76/3b_344_PUC23 Porewater M76/3b_344_PUC29 AOM; SR M76/3b_344_PUC29 Mussel_S Porewater Mussel_S_E Porewater Mussel_S_CHAM M76/3b_344_PUC23 Porewater M76/3b_344_PUC29 AOM; SR M76/3b_364_CHAM1 DNA M76/3b_361_PUC36 Porewater M76/3b_361_PUC36 Porewater M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC13 S REGAB DNA M76/3b_361_PUC24 Porewater M76/3b_361_PUC24 Porewater M76/3b_361_PUC31		Clam_N	nH	M76/3b 323_PUC30
Mr03/2012/002/2011/002/2011/002/2011/001/2012/2011/001/2012/2011/001/2012/2011/001/2012/2011/2012/2011/2012/2011/2012/2011/2012/2012/2011/2012/		(Clam patch)	AOM: SR	M76/3b 323 PUC28 M76/3b 323 PUC31 M76/3b 323 PUC1/ M76/3b 323 PUC12
$S REGAB = \begin{array}{c c c c c c c c c c c c c c c c c c c $			CHAM	M76/2b 225_10C28, M70/30_325_10C31, M70/30_325_10C14, M70/30_325_10C12
Clam_N_Env (Outside clam patch) Porewater M76/3b_332_PUC29 Porewater M76/3b_332_PUC20 AOM; SR M76/3b_332_PUC23; M76/3b_332_PUC29; M76/3b_332_PUC34 MICP M76/3b_335_MICP1 DNA M76/3b_344_PUC23 Mussel_S (Mussel patch) PH M76/3b_344_PUC29 AOM; SR M76/3b_344_PUC29 AOM; SR M76/3b_344_PUC29 AOM; SR M76/3b_364_CHAM1 DNA M76/3b_364_CHAM1 DNA M76/3b_361_PUC36 Porewater M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC14 Porewater M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC13 DNA M76/3b_361_PUC24 Porewater M76/3b_361_PUC24			DNA	M76/2b 222_DIIC20
Clam_N_Env (Outside clam patch) Porewater M76/3b_332_PUC31 PH M76/3b_332_PUC20 AOM; SR M76/3b_332_PUC23; M76/3b_332_PUC29; M76/3b_332_PUC34 MICP M76/3b_335_MICP1 DNA M76/3b_344_PUC23 Porewater M76/3b_344_PUC29 AOM; SR M76/3b_344_PUC29 AOM; SR M76/3b_344_PUC29 AOM; SR M76/3b_364_CHAM1 DNA M76/3b_364_CHAM1 DNA M76/3b_361_PUC36 Porewater M76/3b_361_PUC14 Porewater M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC15 CHAM M76/3b_361_PUC24 Porewater M76/3b_361_PUC24 Porewater M76/3b_361_PUC24			DNA	M7(0)50_552_F0C29
(Outside clam patch) pH M7/0/35_332_PUC20 AOM; SR M76/3b_332_PUC23; M76/3b_332_PUC29; M76/3b_332_PUC34 MICP M76/3b_335_MICP1 DNA M76/3b_344_PUC23 Porewater M76/3b_344_PUC29 AOM; SR M76/3b_344_PUC29 AOM; SR M76/3b_344_PUC29 AOM; SR M76/3b_364_CHAM1 DNA M76/3b_364_CHAM1 DNA M76/3b_361_PUC36 Porewater M76/3b_361_PUC36 Porewater M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC14 DNA M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC13 DNA M76/3b_361_PUC26 Porewater M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC13 DNA M76/3b_361_PUC26 Porewater M76/3b_361_PUC24 Porewater M76/3b_361_PUC24		Clam_N_Env	Porewater	M7(0)20_352_PUC31
AOM; SR M76/35_332_PUC23; M76/35_332_PUC34 MICP M76/3b_335_MICP1 DNA M76/3b_344_PUC23 Porewater M76/3b_344_PUC29 (Mussel patch) pH Mussel_S M76/3b_344_PUC23; M76/3b_344_PUC28; M76/3b_344_PUC15 CHAM M76/3b_364_CHAM1 DNA M76/3b_361_PUC36 Porewater M76/3b_361_PUC14 Mussel_S_Env PH (Outside mussel patch) PH M06; SR M76/3b_361_PUC14 DNA M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC13 DNA M76/3b_361_PUC13 DNA M76/3b_361_PUC24 Proewater M76/3b_361_PUC24		(Outside clam patch)	pH AOM SP	M70/30_332_PUC20
$S REGAB = \begin{array}{c c c c c c c c c c c c c c c c c c c $			AOM; SR	M/6/3b_332_PUC23; M/6/3b_332_PUC29; M/6/3b_332_PUC34
Mussel_S (Mussel patch) DNA M7/6/3b_344_PUC23 Porewater M76/3b_344_PUC30 PH M76/3b_344_PUC29 AOM; SR M76/3b_344_PUC23; M76/3b_344_PUC28; M76/3b_344_PUC15 CHAM DNA M76/3b_364_CHAM1 DNA DNA M76/3b_361_PUC36 Porewater Mussel_S_Env (Outside mussel patch) PH M76/3b_361_PUC14 PH M76/3b_361_PUC13 AOM; SR AOM; SR M76/3b_361_PUC14 PH M76/3b_361_PUC15 CHAM M76/3b_361_PUC26; M76/3b_361_PUC15 CHAM M76/3b_361_PUC24 Proewater M76/3b_361_PUC24			MICP	M/6/3b_335_MICP1
Mussel_S (Mussel patch) Porewater M/6/3b_344_PUC30 PH M76/3b_344_PUC29 AOM; SR M76/3b_344_PUC23; M76/3b_344_PUC28; M76/3b_344_PUC15 CHAM M76/3b_364_CHAM1 DNA M76/3b_361_PUC36 PH M76/3b_361_PUC14 PH M76/3b_361_PUC15 CHAM M76/3b_361_PUC14 PH M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC15 CHAM M76/3b_361_PUC26; M76/3b_361_PUC15 CHAM M76/3b_361_PUC24 PH M76/3b_361_PUC31			DNA	M/6/3b_344_PUC23
(Mussel patch) pH M76/3b_344_PUC29 AOM; SR M76/3b_344_PUC23; M76/3b_344_PUC28; M76/3b_344_PUC15 CHAM M76/3b_364_CHAM1 DNA M76/3b_361_PUC36 Porewater M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC36 Porewater M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC36; M76/3b_361_PUC15 CHAM M76/3b_361_PUC24 PH M76/3b_361_PUC24 POrewater M76/3b_361_PUC31		Mussel S	Porewater	M76/3b_344_PUC30
AOM; SR M76/3b_344_PUC23; M76/3b_344_PUC28; M76/3b_344_PUC15 CHAM M76/3b_364_CHAM1 DNA M76/3b_361_PUC36 Porewater M76/3b_361_PUC14 PH M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC14 PH M76/3b_361_PUC15 CHAM M76/3b_361_PUC26; M76/3b_361_PUC15 CHAM M76/3b_361_PUC24 POrewater M76/3b_361_PUC24		(Mussel patch)	pH	M76/3b_344_PUC29
Mussel_S_Env (Outside mussel patch) CHAM M76/3b_364_CHAM1 Porewater M76/3b_361_PUC36 PH M76/3b_361_PUC13 AOM; SR M76/3b_361_PUC36; M76/3b_361_PUC15 CHAM M76/3b_361_PUC24 Porewater M76/3b_361_PUC24			AOM; SR	M76/3b_344_PUC23; M76/3b_344_PUC28; M76/3b_344_PUC15
Mussel_S_Env (Outside mussel patch) DNA M76/3b_361_PUC36 Porewater M76/3b_361_PUC14 AOM; SR M76/3b_361_PUC13 CHAM M76/3b_364_CHAM2 DNA M76/3b_361_PUC24 Porewater M76/3b_361_PUC24			СНАМ	M76/3b_364_CHAM1
$S REGAB \qquad \begin{array}{c c c c c c c c c c c c c c c c c c c $		Mussel S Env	DNA	M76/3b_361_PUC36
S REGAB PH M76/3b_361_PUC13 Outside mussel patch) PH AOM; SR M76/3b_361_PUC13 OUtside mussel patch) CHAM M76/3b_361_PUC36; M76/3b_361_PUC15 CHAM M76/3b_364_CHAM2 DNA M76/3b_361_PUC24 Porewater M76/3b_361_PUC31			Porewater	M76/3b_361_PUC14
S REGAB AOM; SR M76/3b_361_PUC36; M76/3b_361_PUC15 CHAM M76/3b_364_CHAM2 DNA M76/3b_361_PUC24 Porewater M76/3b_361_PUC31		(Outside mussel natch)	pН	M76/3b_361_PUC13
S REGAB CHAM M76/3b_364_CHAM2 DNA M76/3b_361_PUC24 Porewater M76/3b_361 PUC31			AOM; SR	M76/3b_361_PUC36; M76/3b_361_PUC15
S REGAB DNA M76/3b_361_PUC24 Porewater M76/3b_361_PUC31			CHAM	M76/3b_364_CHAM2
Porewater M76/3b 361 PUC31	S REGAB	Clam_S (Clam patch)	DNA	M76/3b_361_PUC24
(19m N)			Porewater	M76/3b_361_PUC31
(Clam patch) pH M76/3b_355_PUC9			pН	M76/3b_355_PUC9
AOM; SR M76/3b_361_PUC10; M76/3b_361_PUC21; M76/3b_361_PUC24			AOM; SR	M76/3b_361_PUC10; M76/3b_361_PUC21; M76/3b_361_PUC24
CHAM M76/3b_355_CHAM1			CHAM	M76/3b_355_CHAM1
DNA M76/3b_355_PUC29		Clam_S_Env (Outside clam patch)	DNA	M76/3b_355_PUC29
Porewater M76/3b_355_PUC35			Porewater	M76/3b_355_PUC35
Clam_S_Env pH M76/3b_355_PUC20			pН	M76/3b_355_PUC20
(Outside clam patch) AOM; SR M76/3b_355_PUC11; M76/3b_355_PUC7; M76/3b_355_PUC29			AOM; SR	M76/3b_355_PUC11; M76/3b_355_PUC7; M76/3b_355_PUC29
MICP M76/3b_361_MICP1; M76/3b_361_MICP2			MICP	M76/3b_361_MICP1; M76/3b_361_MICP2
CHAM M76/3b 355 CHAM2			CHAM	M76/3b 355 CHAM2
DNA M76/3b_364_PUC7		Gas (Gas bubble)	DNA	M76/3b_364_PUC7
Gas Porewater M76/3b 364 PUC21	DECAD		Porewater	M76/3b 364 PUC21
KEGAB (Gas bubble) pH M76/3b 364 PUC28	REGAB		pН	M76/3b 364 PUC28
AOM; SR M76/3b 364 PUC7; M76/3b 364 PUC29; M76/3b 364 PUC9			AOM; SR	M76/3b 364 PUC7; M76/3b 364 PUC29; M76/3b 364 PUC9
DNA M76/3b 379 PUC28			DNA	M76/3b 379 PUC28
Porewater M76/3b 379 PUC29	SW REGAB	Clam_SW (Clam patch)	Porewater	M76/3b 379 PUC29
Clam Sw pH M76/3b 379 PUC34			pН	M76/3b 379 PUC34
(Clampatch) AOM; SR M76/3b 379 PUC28; M76/3b 379 PUC14; M76/3b 379 PUC15			AOM; SR	M76/3b 379 PUC28; M76/3b 379 PUC14; M76/3b 379 PUC15
CHAM M76/3b 379 CHAM1			CHAM	M76/3b 379 CHAM1
SW REGAB DNA M76/3b 379 PUC10			DNA	M76/3b 379 PUC10
Porewater M76/3b 379 PUC9		Clam_SW_Env (Outside clam patch)	Porewater	M76/3b 379 PUC9
Clam SW Env pH M76/3b 379 PUC5			рН	M76/3b 379 PUC5
(Outside clam patch) AOM: SR M76/3b 379 PUC10 M76/3b 379 PUC13			AOM: SR	M76/3b 379 PUC10: M76/3b 379 PUC13
MICP M76/3b 385 MICP1 M76/3b 385 MICP2			MICP	M76/3b 385 MICP1: M76/3b 385 MICP2
CHAM M76/3b 379 CHAM2			CHAM	M76/3b 379 CHAM2

Supplement Table 2 Percentage of shared OTUs between all sites investigated at REGAB. Prior to this analysis, the depth samples within individual sites were merged.

Bacter_N_Env 79 Clam_N 83 73 Clam_N_Env 84 77 82 Mussel_S 69 65 67 71 Mussel S Env 58 56 61 57 64		Bacter_N	Bacter_N_Env	Clam_N	Clam_N_Env	Mussel_S	Mussel_S_Env	Clam_S_Env	Clam_S	Gas	Clam_SW
Clam_N 83 73 Clam_N_Env 84 77 82 Mussel_S 69 65 67 71 Mussel S Env 58 56 61 57 64	Bacter_N_Env	79									
Clam_N_Env 84 77 82 Mussel_S 69 65 67 71 Mussel S Env 58 56 61 57 64	Clam_N	83	73								
Mussel_S 69 65 67 71 Mussel S Env 58 56 61 57 64	Clam_N_Env	84	77	82							
Mussel S Env 58 56 61 57 64	Mussel_S	69	65	67	71						
	Mussel_S_Env	58	56	61	57	64					
Clam_S_Env 64 60 62 65 61 55	Clam_S_Env	64	60	62	65	61	55				
Clam_S 68 64 69 68 66 57 67	Clam_S	68	64	69	68	66	57	67			
Gas 69 63 67 65 65 56 61 65	Gas	69	63	67	65	65	56	61	65		
Clam_SW 80 71 72 78 70 54 64 66 70	Clam_SW	80	71	72	78	70	54	64	66	70	
Clam_SW_Env 73 65 69 72 68 53 60 63 65 79	Clam_SW_Env	73	65	69	72	68	53	60	63	65	79

Supplement Table 3 Comparison of the shared OTUs (given as percentage) among all depth samples, between bare sediment sites and clam populated sites. An OTU was regarded as shared only if it was present in all samples (0 - 10 cm or 0 - 5 cm). The percentage of shared OTUs was calculated as the fraction of the total OTUs at the individual habitat.

	Clam_N	Clam_S	SW_Clam	Clam_N	Clam_S	SW_Clam
	(0 - 10 cm)	(0 - 10 cm)	(0 - 10 cm)	(0 - 5 cm)	(0 - 5 cm)	(0 - 5 cm)
Inside	36	30	22	47	40	47
Outside	34	30	36	42	44	44

Supplement Table 4 Distance-based test for homogeneity of multivariate dispersions. Table comprises average distances to the centroids, calculated based on Jaccard and Bray-Curtis dissimilarity indices. The higher the value of the average distance to the centroid, the higher the dispersion (variance) within the respective group. The test was performed incorporating only the surface samples (0 - 5 cm), or samples from all depths (0 - 10 cm).

	Clam_N	Clam_N_Env	Clam_S	Clam_S_Env	Clam_SW	Clam_SW_Env
0 - 5 cm (Jaccard)	0.3	0.3	0.4	0.3	0.3	0.3
0 - 5 cm (Bray-Curtis)	0.2	0.2	0.3	0.2	0.2	0.2
0 - 10 cm (Jaccard)	0.4	0.4	0.4	0.4	0.4	0.4
0 - 10 cm (Bray-Curtis)	0.2	0.2	0.3	0.3	0.3	0.3



Supplement Fig. 5 OTU partitioning analysis taking into account all sediment depth samples (0 - 10 cm). 50% of the total OTUs were found to be shared by all three clam patches (a). The clam patches had no unique OTUs relative to the other investigated habitats at REGAB (b).



Supplement Fig. 6 OTU partitioning analysis taking into account the topmost 5 cm sediment depth samples. 58% of the total OTUs were found to be shared by all three clam patches (a). The clam patches had no unique OTUs relative to the other investigated habitats at REGAB (b).