

Macrobenthic community structure and influence on denitrification capacity in soft sediments (Mobile Bay, Alabama, USA)

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Marine Ecology Progress Series 506: 17–35 (2018)

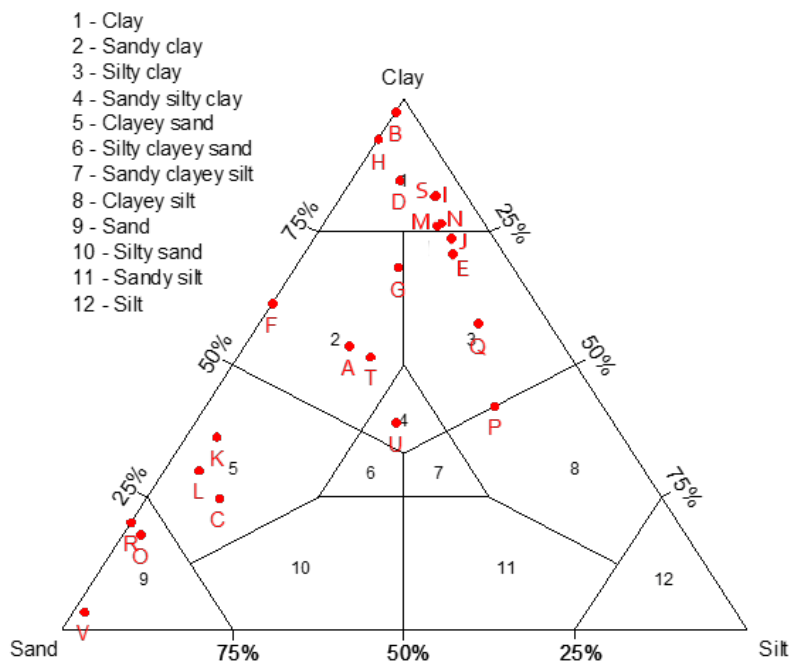


Figure S1: Shepard diagram with the different stations (A to V) in red indicating their sediment type (1-Clay, 2-Sandy clay, 3-Silty clay, 4-Sandy silty clay, 5-Clayey sand, 6-Silty clayey sand, 7-Sandy clayey silt, 8-Clayey silt, 9-Sand, 10-Silty sand, 11-Sandy silt, 12-Silt) depending on their proportion (%) of silt, clay and sand. Station locations are given in Fig. 1.

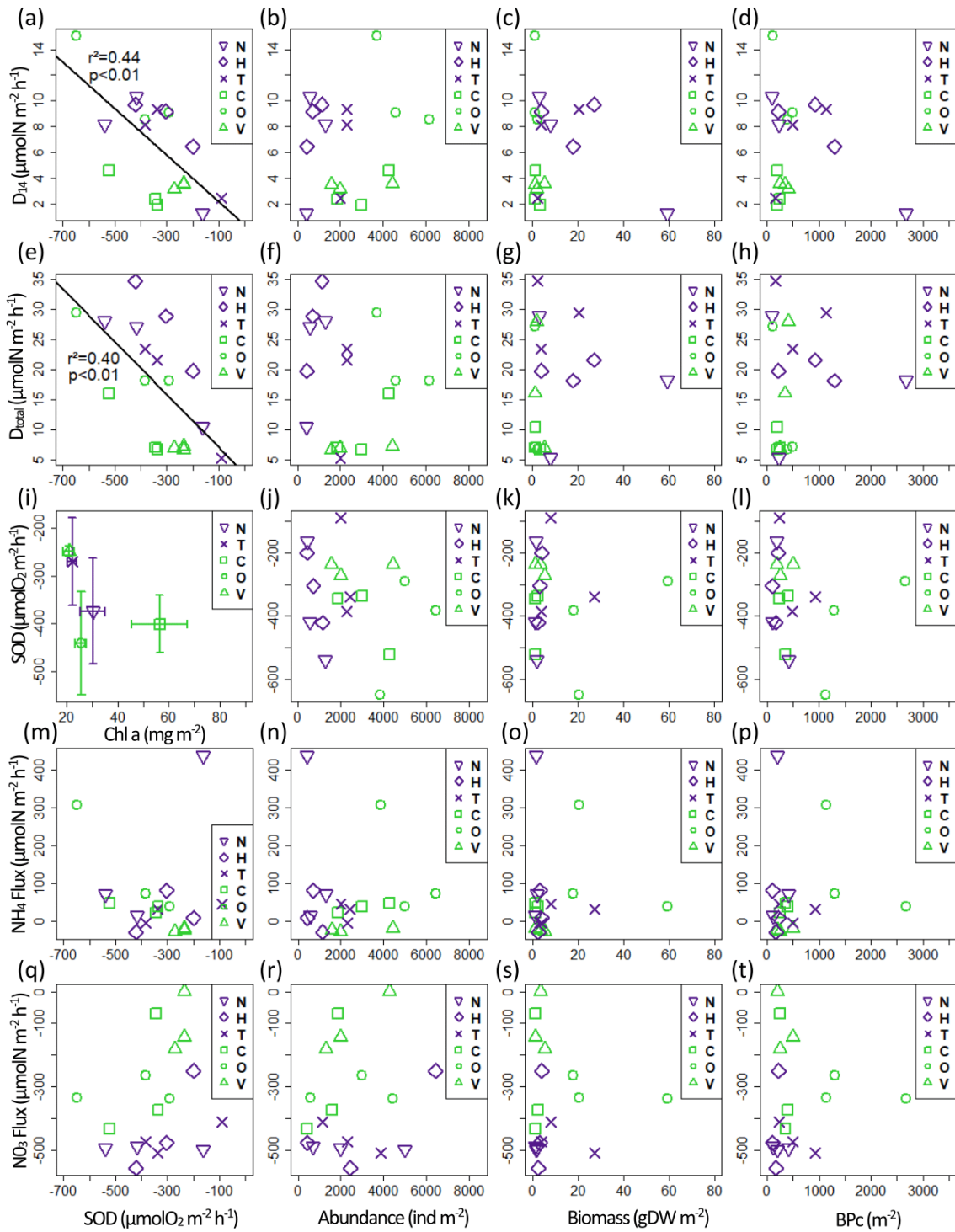


Figure S2: Denitrification rates (D_{14}) [$\mu\text{mol N m}^{-2} \text{h}^{-1}$] (a, b, c, d) and (D_{total}) [$\mu\text{mol N m}^{-2} \text{h}^{-1}$] (e, f, g, h) for individual cores depending on macrofaunal descriptors with oxygen consumption (SOD) [$\mu\text{mol O}_2 \text{ m}^{-2} \text{h}^{-1}$] (a,e), abundances [ind m^{-2}] (b,f), biomass [gDW m^{-2}] (c,g) and community bioturbation potential (BPC) [m^{-2}] (d,h) (Table S7). Oxygen consumption (SOD) [$\mu\text{mol O}_2 \text{ m}^{-2} \text{h}^{-1}$] depending on benthic parameters with chlorophyll *a* (Chl *a*) [mg m^{-2}] (i), plotted as mean for each site, abundances [ind m^{-2}] (j), biomass [gDW m^{-2}] (k) and community bioturbation potential (BPC) [m^{-2}] (l). Nutrient fluxes (ammonium flux (NH_4 flux) [$\mu\text{mol N m}^{-2} \text{h}^{-1}$] (m-p) and nitrates flux (NO_3 flux) [$\mu\text{mol N m}^{-2} \text{h}^{-1}$] (q-t) depending on macrofaunal descriptors with oxygen consumption (SOD) [$\mu\text{mol O}_2 \text{ m}^{-2} \text{h}^{-1}$] (m,q), abundances [ind m^{-2}] (n,r), biomass [gDW m^{-2}] (o,s) and community bioturbation potential (BPC) [m^{-2}] (p,t) (Table S7). Sites in purple are muddy and in green are sandy. Linear regression lines are shown only if significant ($p < 0.05$).

Table S1: Environmental data for each site with sampling date (Date), latitude, longitude, depth [m], temperature (T) [°C], salinity (S), dissolved oxygen of bottom water (DO) [%], secchi disk depth (Secchi) [cm], sediment type (Sed type), porosity, grain size (%sand, silt, clay) [%], carbon content (C) [% weight], nitrogen content (N) [% weight], C:N [mol:mol], location in the bay (Location) , distance from freshwater input source (dist fresh) [m], distance from bay mouth (dist sea) [m], distance from shore (dist coast) [m] and distance from channel (dist chan) [m].

Site	Date	Latitude	Longitude	Depth	T	S	DO	Secchi	Sed type	Porosity	%Sand	%Silt	%Clay	N	C	C/N	Location	dist fresh	dist sea	dist coast
A	20.01.16	30.27875	-87.77315	1.6	11.6	8.5	110	90	Sandy-Clay	0.75	31.31	15.27	53.42	0.19	1.68	10.31	Coast	51.91	28.93	1.45
B	20.01.16	30.282017	-87.813533	2.3	10.7	7.5	100	30	Clay	0.74	2.51	0.00	111.43	0.19	1.66	10.14	Coast	48.47	25.41	3.05
C	20.01.16	30.260667	-87.92135	2.4	13.2	21.1	83.6	60	Clayey-sand	0.66	64.68	10.60	24.72	0.28	2.26	9.60	Coast	45.49	14.15	0.7
D	12.02.16	30.358683	-88.079833	3.5	12	6.8	87	50	Clay	0.67	8.20	7.06	84.74	0.17	1.64	11.19	Middle	36.21	14.67	3.15
E	12.02.16	30.346967	-88.073333	3.4	11.9	2.9	99.1	30	Silty-Clay	0.72	7.31	21.82	70.88	0.19	1.80	10.82	Middle	37.37	13.11	4.19
F	12.02.16	30.359183	-88.09505	2.8	12.4	6.1	96	40	Sandy-Clay	0.65	38.48	0.00	61.52	0.14	1.30	10.63	Coast	37.18	15.24	1.75
G	12.02.16	30.382367	-88.049733	3.6	12.5	6.5	102.2	60	Sandy-Clay	0.67	16.67	15.16	68.17	0.17	1.68	11.43	Middle	32.45	17.44	5.54
H	12.02.16	30.43335	-88.061133	3.4	12.4	5.9	102.8	40	Clay	0.73	7.63	0.00	92.37	0.20	2.01	11.75	Coast	28.91	22.91	4.29
I	18.02.16	30.441183	-87.964967	3.1	14.8	8.6	83	50	Clay	0.71	4.76	13.61	81.63	0.21	2.00	11.29	Coast	25.41	25.32	4.85
J	18.02.16	30.442267	-87.943383	2.9	14.5	4.8	81.2	60	Silty-Clay	0.71	6.17	20.11	73.72	0.19	1.86	11.37	Coast	25.17	26.64	2.83
K	18.02.16	30.40545	-87.93745	3.2	13.1	2.8	91.7	40	Clayey-sand	0.49	59.07	4.55	36.38	0.06	0.55	11.21	Coast	29.32	25.35	2.92
L	18.02.16	30.363567	-87.848	1.8	14.9	4.3	124	40	Clayey-sand	0.60	64.88	5.02	30.10	0.11	1.05	10.77	Coast	39.84	25.47	1.12
M	18.02.16	30.311067	-87.874383	2.8	14.7	19.1	53.1	50	Clay	0.71	7.10	16.90	76.00	0.21	1.92	10.72	Coast	45.5	20.12	6.28
N	18.02.16	30.31375	-87.93435	3.2	14.7	25.7	70.7	60	Clay	0.72	6.31	17.04	76.65	0.22	2.01	10.63	Middle	39.8	15.25	5.96
O	16.03.16	30.261583	-88.0011	4.5	20	2.9	15.1	20	Sand	0.38	79.38	2.58	18.04	0.06	0.97	19.64	Mouth	44.63	6.73	3.29
P	16.03.16	30.282067	-87.970183	3.4	20.4	3.2	72.7	25	Silty-Clay	0.73	15.62	42.21	42.17	0.30	2.73	10.84	Middle	43.03	10.55	3.6
Q	16.03.16	30.3126	-87.99505	3.3	19.8	1.6	81.1	40	Silty-Clay	0.70	10.37	32.02	57.60	0.21	1.99	11.21	Middle	39.74	11.67	8.89
R	16.03.16	30.395767	-87.894333	2.1	21.8	4.1	75.5	20	Sand	0.49	79.69	0.00	23.70	0.09	0.77	10.31	Coast	32.1	24.83	0.64
S	16.03.16	30.365667	-87.95845	3.7	19.5	0.8	82.6	40	Clay	0.63	4.37	13.67	81.96	0.17	1.53	10.77	Middle	33.5	18.3	7.01
T	16.03.16	30.2872	-88.070033	4.5	20.7	10.5	81.2	60	Sandy-Clay	0.64	29.22	19.31	51.46	0.18	1.63	10.60	Mouth	43.34	6.96	3.59
U	16.03.16	30.320883	-88.069117	4.5	20.7	3.2	90	50	Sandy-Silty-Clay	0.61	31.72	29.28	39.01	0.19	1.61	9.89	Middle	39.55	10.62	5.88
V	16.03.16	30.26495	-88.0685	4.4	19.7	7.8	85.9	70	Sand	0.24	94.89	1.70	3.40	0.03	0.26	9.66	Mouth	45.61	4.32	1.81

Table S2: Average family abundances [# ind] for each station (3 replicates) collected using a 0.1 m² Petersen grab.

		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	Mean
Annelida	Amphinomidae	0.00	0.00	0.00	4.33	5.00	0.67	7.67	0.67	0.33	0.00	0.00	0.00	0.00	8.33	1.00	5.67	10.33	0.00	2.67	0.33	7.33	0.00	2.47
Annelida	Capitellidae	7.67	2.00	66.33	4.33	0.33	19.00	2.00	43.33	27.33	21.33	80.00	85.00	27.33	8.33	10.67	0.67	1.00	80.00	5.67	13.33	0.00	14.67	23.65
Annelida	Chaetopteridae	1.33	1.00	0.33	1.67	1.00	0.33	1.00	0.00	2.00	3.33	7.33	3.00	6.00	1.67	0.00	0.00	0.33	0.00	1.33	0.33	0.00	0.67	1.48
Annelida	Cirratulidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.02
Annelida	Coscuridae	0.00	4.00	8.33	10.00	8.00	0.00	12.67	2.00	5.33	5.67	1.67	4.67	8.00	8.00	1.00	47.67	33.67	0.00	5.33	17.33	9.00	0.67	8.77
Annelida	Eunicidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Annelida	Glyceridae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Annelida	Goniadidae	10.67	1.67	34.00	9.33	9.00	2.33	5.33	13.00	5.33	11.33	17.33	15.33	6.67	5.67	8.67	1.33	7.33	0.00	8.67	9.33	3.33	1.67	8.52
Annelida	Hesionidae	1.67	7.00	5.67	2.00	2.33	1.33	2.00	0.00	3.67	2.33	3.67	2.67	1.00	1.33	0.00	0.33	0.33	0.00	0.00	0.67	0.67	0.67	1.79
Annelida	Lumbrineridae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.33	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.80
Annelida	Magelonidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.67	0.33	0.00	0.00	0.00	3.00	0.33	5.33	0.67
Annelida	Maldanidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.05
Annelida	Nephtyidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Annelida	Nereididae	0.67	0.33	6.67	0.33	0.00	1.33	0.00	0.33	0.00	0.00	0.67	2.00	0.00	0.00	3.33	0.00	0.00	1.00	0.00	0.67	0.00	3.33	0.94
Annelida	Onuphidae	0.00	0.00	1.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
Annelida	Orbiniidae	33.67	13.00	7.00	3.33	5.33	8.67	2.00	1.67	8.33	16.33	9.33	42.33	17.00	4.33	0.33	3.33	6.00	7.33	6.33	0.00	3.00	0.67	9.06
Annelida	Oweniidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.17
Annelida	Pectinariidae	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.00	0.33	0.00	1.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.15
Annelida	Phyllodoceidae	0.67	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	1.33	0.00	0.00	0.33	0.00	1.00	0.00	1.00	0.32
Annelida	Pilargidae	21.33	1.33	2.00	5.33	5.00	1.67	3.00	1.33	2.67	2.67	5.67	15.67	4.33	6.67	10.00	7.67	10.33	12.33	7.33	8.33	8.67	2.00	6.61
Annelida	Sigalionidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Annelida	Spionidae	13.00	4.67	116.67	14.33	7.33	4.67	7.67	10.00	4.67	8.00	12.00	30.00	6.33	12.33	14.67	5.00	17.33	57.33	3.67	10.67	11.00	9.00	17.29
Annelida	Sternaspidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.02
Mollusca	Acteocinidae	0.67	0.33	0.00	0.33	1.67	0.00	0.67	1.00	0.67	0.67	1.33	0.00	0.00	0.33	8.33	0.00	0.67	0.00	0.33	3.67	1.33	6.33	1.29
Mollusca	Arcidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.03
Mollusca	Eulimidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Mollusca	Hydrobiidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.30
Mollusca	Juv Gastropoda	3.00	1.67	4.67	0.33	0.67	0.00	0.00	0.00	0.00	0.33	1.33	4.33	0.00	0.00	0.00	0.00	3.00	6.00	1.67	0.00	0.33	0.33	1.26
Mollusca	Lasaeidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
Mollusca	Lucinidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	52.67	0.00	0.00	0.00	0.00	0.00	0.33	0.33	2.42
Mollusca	Macridae	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	3.33	0.00	0.33	0.20
Mollusca	Nassariidae	0.00	0.67	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	1.00	0.67	0.00	0.33	0.00	0.00	0.00	0.17
Mollusca	Naticidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Mollusca	Nuculanidae	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.33	0.00	0.33	0.00	0.00	3.67	1.33	1.00	0.74
Mollusca	Pandoridae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Mollusca	Pyramidellidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Mollusca	Rissoidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.02
Mollusca	Solecurtidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Mollusca	Tellinidae	9.67	2.67	4.00	7.33	3.33	9.00	3.00	5.00	3.33	4.33	5.00	9.33	3.00	0.00	16.33	0.00	1.00	7.00	1.33	7.33	3.33	4.67	5.00
Mollusca	Tornidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Mollusca	Veneridae	0.00	0.00	41.33	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.67	0.00	0.00	0.33	0.00	0.00	0.33	4.00	2.36
Mollusca	Yoldiidae	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	4.00	0.67	0.67	0.00	0.00	8.33	1.67	0.67	0.76
Arthropoda	Anthuridae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
Arthropoda	Axiidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Arthropoda	Bodotiidae	2.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	0.27
Arthropoda	Callianassidae	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.05
Arthropoda	Caprellidae	0.00	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Arthropoda	Corophiidae	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Arthropoda	Diastylidae	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Arthropoda	Gammaridae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Arthropoda	Isaeidae	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
Arthropoda	Leuconidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.00	0.00	0.00	16.33	0.33	0.00	0.79
Arthropoda	Ogyrididae	0.00	0.00	0.00	0.67	0.33	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.33	0.00	0.00	0.00	0.00	0.33	0.0		

Table S3: Mean macrofaunal biomass [g WW] for each station (3 replicates) collected using a 0.1 m² Petersen grab.

		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	Mean
Annelida	Amphinomidae	0.00	0.00	0.00	0.02	0.02	0.01	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.01	0.03	0.03	0.00	0.01	0.00	0.02	0.00	0.01
Annelida	Capitellidae	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03	0.03	0.01	0.00	0.13	0.00	0.00	0.02	0.00	0.08	0.00	0.00	0.02
Annelida	Chaetopteridae	0.03	0.01	0.01	0.02	0.02	0.01	0.01	0.00	0.07	0.09	0.21	0.14	0.13	0.03	0.00	0.01	0.00	0.04	0.00	0.00	0.00	0.00	0.04
Annelida	Cirratulidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annelida	Cossuridae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.01	0.00	0.00	0.01	0.00	0.00	0.00
Annelida	Eunicidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annelida	Glyceridae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annelida	Goniadidae	0.02	0.00	0.05	0.01	0.01	0.00	0.01	0.02	0.01	0.01	0.04	0.04	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.01
Annelida	Hesionidae	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annelida	Lumbrineridae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Annelida	Magelonidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00
Annelida	Maldanidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annelida	Nephtyidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annelida	Nereididae	0.03	0.00	0.16	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.03	0.10	0.00	0.00	0.02	0.00	0.00	0.03	0.00	0.00	0.04	0.01	0.02
Annelida	Onuphiidae	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annelida	Orbiniidae	0.44	0.23	0.06	0.11	0.15	0.06	0.09	0.01	0.26	0.18	0.12	0.27	0.22	0.13	0.00	0.15	0.20	0.02	0.13	0.00	0.03	0.01	0.13
Annelida	Oweniidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
Annelida	Pectinariidae	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Annelida	Phyllodoceidae	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00
Annelida	Pilargidae	0.04	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.02	0.04	0.08	0.01	0.22	0.00	0.03	0.04	0.06	0.01	0.00	0.02	0.00	0.03
Annelida	Sigalionidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annelida	Spionidae	0.34	0.17	0.92	0.12	0.04	0.02	0.07	0.07	0.05	0.16	0.21	0.20	0.15	0.24	0.45	0.39	0.69	0.02	0.04	0.37	0.25	0.22	0.24
Annelida	Sternaspidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mollusca	Arcidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00
Mollusca	Acteocinidae	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.26	0.00	0.01	0.00	0.00	0.04	0.01	0.11	0.02
Mollusca	Eulimidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mollusca	Hydrobiidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Mollusca	Juv Gastropoda	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mollusca	Lasaeidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mollusca	Lucinidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.03
Mollusca	Mactridae	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.49	0.00	0.05	0.03
Mollusca	Nassaridae	0.00	0.03	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.00	0.01	0.00	0.00	0.00	0.01
Mollusca	Naticidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mollusca	Nuculanidae	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.01	0.00	0.00	0.28	0.08	0.02	0.03
Mollusca	Pandoridae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mollusca	Pyramidellidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mollusca	Rissoidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mollusca	Solecurtidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Mollusca	Tellinidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.54	0.00	0.00	0.07	0.00	0.01	0.00	0.16	0.04	0.04
Mollusca	Tornidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mollusca	Veneridae	0.00	0.00	0.04	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02
Mollusca	Yoldiidae	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Anthuridae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Axidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Bodotriidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Callianassidae	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Caprellidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Corophiidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Diastylidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Gammaridae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Isaeidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Arthropoda	Leuconidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Arthropoda	Ogyrididae	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Arthropoda	Pinnotheridae	0.02</																						

Table S4: Kruskal Wallis test results for total abundance [individuals m⁻²], total biomass [g m⁻²], taxonomic richness, Shannon’s diversity, Pielou’s evenness and Simpson’s diversity index of macrofauna sampled at 22 sites classified depending on their % sand (<60% sand, 60-80% sand or >80% sand) and their location (stations near the coast (Coast), stations in the middle of the bay (Middle) and stations near the mouth of the bay (Mouth)). p-value is significant with “*” when p < 0.05, “**” when p < 0.01 and “***” when p < 0.001.

	% sand			Location			
	chi ²	df	p-value	chi ²	df	p-value	
Abundance	5.24	2	0.073	0.59	2	0.75	
Biomass	4.73	2	0.094	3.99	2	0.14	
Taxonomic richness	4.84	2	0.089	8.04	2	0.018	*
Shannon’s diversity	2.76	2	0.25	12.36	2	0.0021	**
Pielou’s evenness	6.16	2	0.046	6.10	2	0.047	*
Simpson’s diversity	3.10	2	0.21	12.04	2	0.0024	**

Table S5: Parsimonious distance-based redundancy analysis (db-RDA) results (see plots in Fig. 7): (a) model summary, (b) marginal effects of terms with variables analysed separately, (c) marginal effects of terms with analysis including all variables and (d) variation explained by individual axes with proportion explained by axes (Prop.). The response is a dissimilarity matrix computed on macrofaunal abundances in all samples of each station. Environmental variables having a significant impact on macrofaunal communities are % Sand, distance from the sea, total carbon content, C/N ratio, distance from the channel, salinity, temperature, turbidity, porosity, Clay/Clay+Silt. Statistical significance is indicated with “***” when $p < 0.001$, “**” when $p < 0.01$, “*” when $p < 0.05$, “ ” when $p > 0.05$.

(a)	df	var.	F	p		
Model	10	7.5573	8.8548	0.001	***	
Residual	55	4.6941				
R² = 62%						
Adj. R² = 55%						
(b)	df	var.	F	p		
% Sand	1	1.2648	14.8197	0.001	***	
Distance from the sea	1	0.6551	7.6760	0.001	***	
Total carbon content	1	0.2298	2.6921	0.011	*	
C/N ratio	1	0.5907	6.9217	0.001	***	
Distance from the channel	1	0.4968	5.8204	0.001	***	
Salinity	1	0.2564	3.0047	0.013	*	
Temperature	1	0.3031	3.5513	0.003	**	
Turbidity	1	0.3484	4.0819	0.002	**	
Porosity	1	0.2887	3.3826	0.001	***	
Clay/Clay+Silt	1	0.2479	2.9050	0.009	**	
Residual	55	4.6941				
(c)	df	AIC.	F	p		
% Sand	1	156.62	12.4661	0.005	**	
Distance from the sea	1	145.17	14.2357	0.005	**	
Total carbon content	1	140.69	6.3955	0.005	**	
C/N ratio	1	137.46	5.0297	0.005	**	
Distance from the channel	1	134.67	4.5245	0.005	**	
Salinity	1	130.80	5.4821	0.005	**	
Temperature	1	128.63	3.7885	0.005	**	
Turbidity	1	126.34	3.8283	0.005	**	
Porosity	1	124.45	3.4001	0.010	**	
Clay/Clay+Silt	1	123.05	2.9050	0.010	**	
(d)	df	var.	F	Prop.	p	
dbRDA1	1	2.9724	28.1709	0.2032	0.001	***
dbRDA2	1	1.6361	15.5063	0.1170	0.001	***
dbRDA3	1	1.0986	10.4117	0.07991	0.001	***
dbRDA4	1	0.7101	6.7302	0.03949	0.001	***
dbRDA5	1	0.3346	3.1710	0.02365	0.001	***
dbRDA6	1	0.3180	3.0137	0.02091	0.003	**
dbRDA7	1	0.2156	2.0433	0.01477	0.018	*
dbRDA8	1	0.1632	1.5464	0.01205	0.065	
dbRDA9	1	0.1396	1.3226	0.00792	0.158	
dbRDA10	1	0.0829	0.7859		0.775	
Residual	55	5.8031				

dbRDA, distance-based redundancy analysis axes

Table S7: Summary table for all the sediment replicate cores with sediment type (Sed), macrofaunal total abundance (A) [ind m⁻²], biomass (B) [gWW m⁻²], community bioturbation potential (BPc) [m⁻²], chlorophyll *a* (Chl *a*) [mg m⁻²], Carbon content (C) [% wt], Nitrogen content (N) [% wt], C:N [mol:mol], sediment oxygen demand (SOD) [μmol O₂ m⁻² h⁻¹], NO₃⁻ flux (NO₃) [μmol N m⁻² h⁻¹], NH₄⁺ flux (NH₄) [μmol N m⁻² h⁻¹] and denitrification rate (D₁₅, D₁₄ and D_{total}) [μmol N m⁻² h⁻¹].

Site	Sed	Chl <i>a</i>	C	N	C:N	SOD	NO ₃	NH ₄	D ₁₅	D ₁₄	D _{total}	A	B	BPc
N.core1						-163.96	-497.22	438.87	9.24	1.26	10.51	429	1.39	192.6
N.core2	Mud	30.22	2.0067	0.2200	10.63	-418.37	-487.46	14.23	16.73	10.32	27.05	571	1.05	113.1
N.core3						-538.86	-492.57	69.88	19.80	8.15	27.96	1286	2.04	411.7
H.core1						-199.87	-249.35	7.54	13.31	6.44	19.75	429	4.03	215.8
H.core2	Mud	NA	2.0100	0.2000	11.75	-304.41	-476.14	81.05	19.64	9.17	28.81	714	3.24	101.2
H.core3						-420.94	-555.26	-29.64	24.89	9.70	34.59	1143	2.44	170.9
T.core1						-338.36	-507.81	30.92	12.21	9.36	21.57	2286	27.14	923.7
T.core2	Mud	22.17	1.6333	0.1800	10.60	-89.09	-409.52	45.04	2.97	2.42	5.38	2000	8.12	232.0
T.core3						-384.39	-471.97	-4.90	15.29	8.16	23.45	2286	3.95	489.6
C.core1						-343.78	-69.78	21.62	4.75	2.36	7.11	1857	1.08	241.5
C.core2	Sand	56.39	2.2600	0.2767	9.60	-336.29	-372.77	37.79	4.79	1.91	6.69	3000	2.30	395.3
C.core3						-521.83	-432.51	47.57	11.41	4.61	16.02	4286	1.11	353.3
O.core1						-382.55	-264.49	72.63	9.56	8.57	18.13	6143	17.98	1300.4
O.core2	Sand	25.56	0.9667	0.0567	19.64	-290.53	-337.37	37.87	9.02	9.11	18.13	4571	59.47	2668.1
O.core3						-648.71	-334.30	307.77	14.41	15.02	29.42	3714	20.44	1131.7
V.core1						-236.32	0.49	-24.53	3.27	3.47	6.74	1571	3.33	195.0
V.core2	Sand	20.82	0.2567	0.0333	9.66	-236.99	-143.69	-19.43	3.68	3.55	7.23	4429	1.18	493.0
V.core3						-271.13	-181.16	-28.27	3.88	3.12	7.01	2000	5.25	251.9