

Seasonal variability in ecosystem functions: quantifying the contribution of invasive species to nutrient cycling in coastal ecosystems

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Marine Ecology Progress Series 572: 193–207 (2017)

Table S1. Correlation matrices from Draftsman plots between response and predictor variables at Storfjärden and Munken during the whole year, during periods of high and low oxygen consumption, and during March and May. MACO_BAL = *Macoma balthica*, MARENZEZ = *Marenzelleria* spp., Others = other macrofaunal taxa.

Storfjärden year

	MACO_BAL	MARENZEZ	Others	Temp	Sal	pH	LOI	CN	NOX	NH4	PO4	O2flux	Fe	Mn
MACO_BAL														
MARENZEZ	0.52													
Others	0.78	0.46												
Temp	-0.26	0.04	-0.32											
Sal	0.22	-0.08	0.06	-0.27										
pH	-0.52	-0.43	-0.39	0.26	-0.78									
LOI	-0.23	0.26	-0.12	0.39	-0.67	0.37								
CN	-0.10	0.08	0.12	-0.43	-0.23	0.00	-0.09							
NOX	0.00	0.20	0.02	0.23	-0.27	0.12	0.28	-0.05						
NH4	-0.03	0.13	-0.07	0.22	0.01	-0.09	0.01	0.02	0.08					
PO4	0.02	0.24	0.04	0.45	-0.10	-0.04	0.09	0.02	0.25	0.74				
O2flux	0.04	-0.38	-0.15	-0.39	0.35	-0.06	-0.48	-0.14	-0.38	-0.32	-0.67			
Fe	0.02	-0.14	0.04	0.00	0.30	-0.20	-0.27	-0.02	-0.11	0.04	0.11	0.05		
Mn	0.55	0.45	0.43	-0.03	0.06	-0.38	0.12	-0.22	-0.05	0.24	0.08	-0.04	0.04	
Si	0.24	0.04	0.32	0.01	-0.01	-0.14	-0.16	0.13	0.08	0.32	0.49	-0.26	0.16	0.37

Storfjärden high

	MACO_BAL	MARENZEZ	Others	Temp	Sal	pH	LOI	CN	NOX	NH4	PO4	O2flux	Fe	Mn
MACO_BAL														
MARENZEZ	0.63													
Others	0.83	0.36												
Temp	-0.36	-0.28	-0.53											
Sal	0.44	0.44	0.29	-0.29										
pH	-0.60	-0.66	-0.42	0.46	-0.92									
LOI	-0.37	-0.14	-0.43	0.52	-0.83	0.67								
CN	-0.39	-0.33	-0.08	-0.66	0.01	0.04	-0.36							
NOX	-0.10	0.01	-0.17	0.44	-0.14	0.15	0.34	-0.36						
NH4	-0.07	0.03	-0.10	0.12	0.10	-0.06	-0.03	-0.07	0.04					
PO4	-0.05	-0.10	-0.12	0.32	0.25	-0.05	-0.24	-0.18	0.12	0.78				
O2flux	0.14	0.28	0.08	-0.31	-0.25	0.01	0.27	0.06	-0.34	-0.40	-0.65			
Fe	0.02	-0.19	0.07	-0.06	0.15	-0.03	-0.29	0.12	-0.11	0.05	0.18	-0.10		
Mn	0.62	0.58	0.52	-0.19	0.08	-0.32	0.07	-0.46	-0.04	0.13	-0.06	0.20	-0.03	
Si	0.35	0.03	0.60	-0.47	0.30	-0.29	-0.52	0.15	-0.14	0.11	0.24	-0.15	0.67	0.45

Storfjärden low

	MACO_BAL	MARENZEZ	Others	Temp	Sal	pH	LOI	CN	NOX	NH4	PO4	O2flux	Fe	Mn
MACO_BAL														
MARENZEZ	0.54													
Others	0.64	0.59												
Temp	-0.01	0.02	-0.05											
Sal	-0.31	-0.28	-0.18	0.38										
pH	-0.28	-0.27	-0.38	-0.39	-0.69									
LOI	-0.12	0.12	0.00	-0.42	-0.10	-0.06								
CN	0.69	0.62	0.58	-0.20	-0.58	-0.09	0.05							
NOX	0.15	0.15	0.19	-0.33	-0.26	0.08	0.00	0.22						
NH4	0.13	0.16	-0.10	0.48	0.01	-0.22	-0.24	0.22	0.06					
PO4	0.34	0.14	0.05	0.34	-0.12	-0.15	-0.42	0.35	0.22	0.83				
O2flux	0.05	-0.09	0.00	0.25	0.33	-0.15	-0.54	-0.17	-0.26	-0.29	-0.09			
Fe	0.00	-0.12	-0.05	0.15	0.77	-0.58	-0.38	-0.30	-0.12	0.01	-0.05	0.46		
Mn	0.33	0.24	0.05	0.34	0.18	-0.56	0.11	0.29	-0.15	0.65	0.45	-0.23	0.21	
Si	0.03	-0.23	-0.12	0.36	-0.06	-0.02	-0.27	0.13	0.15	0.62	0.77	-0.19	-0.29	0.25

Storfjärden March and May

	MACO_BAL	MARENZEZ	Others	Temp	Sal	pH	LOI	CN	NOX	NH4	PO4	O2flux	Fe	Mn
MACO_BAL														
MARENZEZ	0.00													
Others	0.27	-0.11												
Temp	-0.03	0.13	-0.18											
Sal	0.35	-0.68	-0.31	0.00										
pH	-0.29	0.53	0.35	-0.49	-0.87									
LOI	-0.22	0.50	0.03	0.81	-0.58	0.11								
CN	-0.21	0.35	0.33	-0.76	-0.65	0.94	-0.24							
NOX	0.26	-0.05	0.23	0.16	0.06	-0.12	0.09	-0.15						
NH4	0.03	0.66	0.09	-0.13	-0.67	0.65	0.28	0.54	-0.61					
PO4	-0.07	0.16	-0.29	0.93	0.12	-0.56	0.69	-0.79	-0.07	-0.09				
O2flux	-0.32	-0.15	-0.52	-0.61	0.37	-0.03	-0.71	0.22	-0.46	-0.08	-0.35			
Fe	-0.59	-0.77	-0.09	0.14	0.30	-0.33	-0.06	-0.30	-0.02	-0.58	0.09	0.12		
Mn	-0.20	0.25	-0.34	0.68	-0.25	-0.12	0.70	-0.36	-0.51	0.47	0.68	-0.31	0.06	
Si	-0.45	0.21	0.25	-0.17	-0.78	0.77	0.32	0.64	0.20	0.26	-0.42	-0.30	0.14	0.01

Munken year

	MACO_BAL	MARENZEZ	Others	Temp	Sal	pH	O2bw	LOI	CN	NOX	NH4	PO4	O2flux	Fe	Mn
MACO_BAL															
MARENZEZ	-0.20														
Others	0.13	0.22													
Temp	0.17	-0.32	-0.09												
Sal	0.04	-0.09	0.17	-0.57											
pH	0.18	0.38	0.03	0.03	-0.48										
O2bw	-0.26	0.49	0.11	-0.76	0.06	0.49									
LOI	-0.08	0.44	0.15	0.02	-0.51	0.30	0.17								
CN	-0.42	0.10	0.14	-0.68	0.13	0.01	0.75	0.16							
NOX	0.05	-0.51	-0.04	0.43	0.08	-0.30	-0.54	-0.03	-0.19						
NH4	-0.01	-0.29	0.17	0.15	0.29	-0.43	-0.42	-0.19	-0.17	0.49					
PO4	0.02	0.08	0.31	0.31	-0.33	-0.01	-0.15	0.34	-0.02	0.25	0.10				
O2flux	-0.47	0.10	0.29	-0.33	0.16	-0.01	0.32	0.21	0.55	0.05	0.06	-0.02			
Fe	0.14	0.07	0.32	-0.05	0.23	0.07	0.02	-0.05	-0.01	0.10	0.11	0.02	0.34		
Mn	0.75	-0.09	-0.01	0.01	0.12	0.23	-0.07	-0.14	-0.26	-0.02	-0.07	-0.18	-0.35	0.10	
Si	0.00	-0.06	0.00	0.07	0.23	-0.29	-0.29	-0.16	-0.15	0.13	0.18	-0.02	0.08	0.44	0.02

Munken high

	MACO_BAL	MARENZEZ	Others	Temp	Sal	pH	O2bw	LOI	CN	NOX	NH4	PO4	O2flux	Fe	Mn
MACO_BAL															
MARENZEZ	-0.32														
Others	0.23	0.30													
Temp	-0.03	-0.76	-0.01												
Sal	0.59	0.21	0.28	-0.56											
pH	0.14	0.34	0.11	-0.32	-0.11										
O2bw	-0.20	0.86	0.12	-0.78	0.07	0.71									
LOI	-0.33	0.52	0.35	-0.18	-0.30	0.19	0.49								
CN	-0.69	0.65	0.08	-0.33	-0.19	-0.29	0.37	0.65							
NOX	0.29	-0.75	-0.13	0.71	-0.23	-0.33	-0.73	-0.15	-0.42						
NH4	0.05	-0.32	0.19	0.55	-0.11	-0.32	-0.51	-0.19	-0.15	0.47					
PO4	-0.06	0.04	0.43	0.29	-0.08	-0.24	-0.18	0.30	0.23	0.20	0.31				
O2flux	-0.42	0.33	0.26	0.07	-0.48	0.31	0.37	0.59	0.38	-0.21	-0.06	0.06			
Fe	0.23	0.16	0.40	-0.08	0.15	0.24	0.17	0.12	-0.09	0.05	0.13	0.07	0.35		
Mn	0.76	-0.13	0.02	-0.17	0.45	0.26	0.02	-0.29	-0.53	0.02	-0.12	-0.26	-0.38	0.14	
Si	0.03	0.06	0.08	-0.02	0.34	-0.13	-0.08	-0.18	-0.09	0.01	-0.15	0.07	-0.08	0.34	-0.01

Munken low

	MACO_BAL	MARENZEZ	Others	Temp	Sal	pH	O2bw	LOI	CN	NOX	NH4	PO4	O2flux	Fe	Mn
MACO_BAL															
MARENZEZ	-0.28														
Others	0.05	0.16													
Temp	0.52	-0.52	-0.08												
Sal	0.00	-0.36	-0.01	-0.42											
pH	-0.40	0.45	-0.03	0.12	-0.87										
O2bw	-0.78	0.60	0.04	-0.73	-0.17	0.56									
LOI	0.25	0.76	0.02	0.00	-0.59	0.42	0.10								
CN	-0.62	0.70	0.10	-0.67	-0.36	0.60	0.93	0.31							
NOX	0.51	-0.33	-0.07	0.64	-0.10	-0.16	-0.67	0.10	-0.63						
NH4	0.31	-0.29	0.10	0.10	0.43	-0.58	-0.48	-0.15	-0.48	0.45					
PO4	0.20	0.16	0.16	0.31	-0.51	0.35	-0.08	0.37	0.06	0.46	-0.06				
O2flux	0.12	0.32	0.28	-0.35	-0.04	-0.17	0.10	0.24	0.36	-0.25	-0.06	0.10			
Fe	0.28	-0.53	-0.14	0.27	0.30	-0.45	-0.50	-0.33	-0.50	0.04	-0.05	-0.01	0.01		
Mn	0.52	-0.51	-0.20	0.45	0.24	-0.54	-0.76	-0.09	-0.70	0.44	0.65	-0.04	-0.07	0.48	
Si	0.23	-0.37	-0.08	0.15	0.18	-0.40	-0.41	-0.14	-0.30	0.15	0.38	-0.07	0.15	0.54	0.64

Munken March and May

	MACO_BAL	MARENZEZ	Others	Temp	Sal	pH	O2bw	LOI	CN	NOX	NH4	PO4	O2flux	Fe	Mn
MACO_BAL															
MARENZEZ	-0.36														
Others	-0.16	0.27													
Temp	-0.26	0.96	0.26												
Sal	-0.26	0.96	0.26	1.00											
pH	-0.26	0.96	0.26	1.00	1.00										
O2bw	0.26	-0.96	-0.26	-1.00	-1.00	-1.00									
LOI	0.26	-0.96	-0.26	-1.00	-1.00	-1.00	1.00								
CN	0.26	-0.96	-0.26	-1.00	-1.00	-1.00	1.00	1.00							
NOX	0.25	-0.69	-0.48	-0.74	-0.74	-0.74	0.74	0.74	0.74						
NH4	-0.17	-0.18	-0.27	-0.30	-0.30	-0.30	0.30	0.30	0.30	0.42					
PO4	-0.13	0.10	0.26	0.13	0.13	0.13	-0.13	-0.13	-0.13	-0.04	-0.11				
O2flux	-0.16	-0.78	0.13	-0.77	-0.77	-0.77	0.77	0.77	0.77	0.45	0.05	0.28			
Fe	0.10	0.72	0.09	0.76	0.76	0.76	-0.76	-0.76	-0.76	-0.44	0.10	0.07	-0.82		
Mn	0.24	0.59	-0.43	0.62	0.62	0.62	-0.62	-0.62	-0.62	-0.23	0.12	-0.23	-0.92	0.77	
Si	0.65	0.33	-0.32	0.41	0.41	0.41	-0.41	-0.41	-0.41	-0.19	-0.23	-0.31	-0.80	0.63	0.82

Table S2. Monthly abundances and biomasses of *Marenzelleria* spp., *Macoma balthica* and other taxa, monthly fluxes of oxygen and inorganic nutrients, and monthly concentrations of nutrients in the bottom water (BW) at Storfjärden (33 m) and Munken (10 m).

Storfjärden													
Date	Marenz ind/m ²		Marenz wwt g/m ²		Macoma ind/m ²		Macoma wwt g/m ²		Other taxa ind/m ²		Other taxa wwt g/m ²		
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	
5.6.2013	1195	479	4.3	3.87	1289	302	215.05	41.64	817	407	0.14	0.12	
2.7.2013	2169	633	2.9	1.85	1666	238	171.2	105.85	1132	450	0.38	0.27	
31.7.2013	3112	490	5.13	2.33	8174	2028	200.34	145.93	5313	1643	1.24	0.56	
29.8.2013	1949	672	7.41	5.11	5093	1382	210.18	104.05	2798	1293	1.39	0.87	
30.9.2013	1205	454	3.79	4.02	5711	894	295.51	311.65	4192	480	0.71	0.41	
22.10.2013	1069	464	3.37	1.67	2106	836	178.33	109.17	912	281	0.71	0.89	
27.11.2013	1006	504	3.92	1.12	2515	567	288.6	78.81	597	341	0.65	0.93	
9.1.2014	912	391	4.45	2.07	2767	466	308.92	65.16	1132	642	0.68	1.47	
27.3.2014	1520	595	1.48	0.95	3406	1115	113.02	53.37	1415	720	0.95	0.86	
9.5.2014	1666	141	4.42	1.84	2358	943	204.22	73.37	2264	1862	1.3	1.29	
12.6.2014	2882	960	9.19	3.25	2934	726	278.02	104.79	786	314	0.1	0.1	

Flux															
Date	O ₂ mmol/m ² *d		NO _x mmol/m ² *d		NH ₄ ⁺ mmol/m ² *d		PO ₄ ³⁻ mmol/m ² *d		Si mmol/m ² *d		Fe mmol/m ² *d		Mn mmol/m ² *d		
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	
5.6.2013	-35.94	2.4	0.04	0.01	1.04	0.68	0.33	0.13	<i>not analyzed</i>		0.51	0.48	<i>no samples</i>		
2.7.2013	-31.62	3.85	0	0.01	1.02	1.28	0.19	0.23	<i>not analyzed</i>		0.07	0.42	<i>no samples</i>		
31.7.2013	-29.54	3.57	0	0	0.87	0.59	0.2	0.1	4.27	2.52	0.17	0.12	0.91	0.5	
29.8.2013	-12.82	2.61	0.02	0.01	0.94	0.55	0.09	0.06	2.4	2.2	0.59	1	0.46	0.51	
30.9.2013	<i>no samples</i>		<i>no samples</i>		<i>no samples</i>		<i>no samples</i>		<i>no samples</i>		<i>no samples</i>		<i>no samples</i>		
22.10.2013	-15.59	7.23	-0.05	0.09	0.64	0.32	-0.01	0.02	1.12	1.45	0.19	0.06	0.43	0.16	
27.11.2013	-11.53	4.14	-0.06	0.11	0.97	0.43	0.07	0.1	3.64	4.17	0.07	0.03	0.28	0.05	
9.1.2014	-12.96	1.94	0.03	0.01	0.45	0.2	0.02	0.02	0.9	0.49	-0.02	0.13	0.09	0.04	
27.3.2014	-15.8	2.7	0.01	0.01	0.32	0.1	-0.01	0.03	0.45	1.76	-0.27	0.07	0.12	0.07	
9.5.2014	-24.9	3.92	0	0.12	0.6	0.21	0.03	0.01	2.78	0.47	-0.39	0.29	0.38	0.13	
12.6.2014	-15.59	7.23	0.09	0.03	1.07	1.46	0.17	0.16	1.44	2.37	0.2	0.25	0.64	0.31	

BW conc	O ₂ mmol/l		NO _x mmol/l		NH ₄ ⁺ mmol/l		PO ₄ ³⁻ mmol/l		Si mmol/l		Fe mmol/l		Mn mmol/l	
Date	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
5.6.2013	0.31	0	0	0	0.0019	0.0004	0	0.0002	<i>not analyzed</i>		0.0001	0.0002	<i>no samples</i>	
2.7.2013	0.2	0	0	0	0.0001	0.0001	0	0.0005	<i>not analyzed</i>		0.0004	0.0003	<i>no samples</i>	
31.7.2013	0.17	0	0	0	0.0002	0	0	0.0004	0.0108	0.001	0.0004	0.0001	0.0017	0.0002
29.8.2013	0.16	0.01	0.0001	0	0.0042	0.0006	0	0.0005	0.0119	0.0023	0.0006	0.0002	0.0023	0.0004
30.9.2013	<i>no samples</i>		<i>no samples</i>		<i>no samples</i>		<i>no samples</i>		<i>no samples</i>		<i>no samples</i>		<i>no samples</i>	
22.10.2013	0.24	0	0.0006	0	0.0007	0	0	0.0004	0.0197	0.0013	0.0002	0.0001	0.0003	0
27.11.2013	0.34	0	0.0007	0	0.0002	0.0002	0	0.0003	0.0138	0.0042	0.0001	0	0.0002	0.0001
9.1.2014	0.37	0	0.0007	0	0.0003	0.0001	0	0.0003	0.0137	0.0004	0.0002	0.0002	0.0001	0
27.3.2014	0.38	0	0.0008	0	0.0004	0.0001	0	0.0003	0.0112	0.0015	0.0008	0.0001	0.0003	0.0002
9.5.2014	0.39	0	0.0002	0.0002	0.0008	0.0002	0	0.0001	0.0075	0.0008	0.0011	0.0003	0.0005	0.0002
12.6.2014	0.28	0	0.0001	0	0.003	0.0001	0	0.0003	0.0123	0.0012	0.0007	0	0.0011	0.0002

Environmental

Date	Temp °C	Salinity	pH	O ₂ mmol/l	C/N	LOI %	Mean no of taxa
5.6.2013	9.1	5.8	8	0.31	6.7	14.4	4
2.7.2013	4.3	6.7	7.1	0.2	7.1	13.6	5
31.7.2013	4.4	6.7	7	0.17	6.7	13.6	6
29.8.2013	5.1	6.6	7.1	0.16	7	13.2	6
30.9.2013	13.6	5.8	7.8	0.29	6.8	13.8	5
22.10.2013	5.1	7.1	7.2	0.24	6.6	14.2	5
27.11.2013	6	6.6	7.6	0.34	6.7	12.8	4
9.1.2014	4	6.5	7.7	0.37	6.6	13.2	4
27.3.2014	1.9	6.3	7.7	0.38	6.9	14.1	5
9.5.2014	4	5	8.1	0.39	7.1	15	5
12.6.2014	8.2	5.8	7.5	0.28	6.6	15.3	4

Munken Date	Marenz ind/m ²		Marenz wwt g/m ²		Macoma ind/m ²		Macoma wwt g/m ²		Other taxa ind/m ²		Other taxa wwt g/m ²	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
5.6.2013	629	314	0.2	0.2	1886	1150	22.4	32.83	3081	836	5.41	7.5
2.7.2013	126	132	0.01	0.01	10280	7523	14.08	19.87	2232	1141	0.79	0.52
31.7.2013	63	141	2.07	4.6	51244	23730	22.02	36.17	3552	453	2.92	0.52
29.8.2013	314	314	3.94	4.83	28389	7312	106.89	22.42	6413	1468	17.78	28.96
30.9.2013	63	86	0.76	1.08	6162	1831	11.66	25.22	4118	1215	27.39	58.65
22.10.2013	189	132	5.93	10.84	7608	1753	0.15	0.01	4338	1137	1.02	1.45
27.11.2013	63	86	0.26	0.44	2515	746	8.59	17.57	3804	1015	0.33	0.33
9.1.2014	94	86	0.55	0.94	2138	594	0.24	0.21	4559	910	4.83	9.94
27.3.2014	3835	1290	0.68	0.99	3018	1518	39.88	55.07	4307	1801	0.2	0.11
9.5.2014	17762	2774	6.87	9.28	2452	663	65.58	64.51	5062	1225	13.47	29
12.6.2014	755	407	3.57	5.45	3521	1409	42.62	56.72	2609	326	8.71	17.26

Flux Date	O ₂ mmol/m ² *d		NO _x mmol/m ² *d		NH ₄ ⁺ mmol/m ² *d		PO ₄ ³⁻ mmol/m ² *d		Si mmol/m ² *d		Fe mmol/m ² *d		Mn mmol/m ² *d	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
5.6.2013	-22.51	2.78	0	0	0.23	0.19	0	0.02	<i>not analyzed</i>		-0.24	0.39	<i>no samples</i>	
2.7.2013	-33.74	12.91	0	0.01	0.1	0.19	0	0.02	<i>not analyzed</i>		-0.15	0.11	<i>no samples</i>	
31.7.2013	-32.98	4.46	0	0.01	-0.06	0.19	-0.02	0.02	1.39	1.01	-0.06	0.17	1.13	1.24
29.8.2013	-22.83	4.19	0.02	0.01	0.36	0.29	0.03	0.02	1.81	2.46	0.2	0.27	0.21	0.11
30.9.2013	-16.7	1.28	0.05	0.03	0.1	0.36	0.01	0.03	1.58	0.53	0.06	0.07	0.08	0.04
22.10.2013	-10.14	3.81	0.04	0.02	0.57	0.48	-0.01	0.01	2.84	2.58	0.55	1.52	0.13	0.04
27.11.2013	-23.42	1.86	-0.04	0.14	0.19	0.26	-0.01	0.02	0.48	0.63	-0.07	0.19	0.05	0.04
9.1.2014	-9.28	1.74	-0.01	0.04	0.08	0.07	-0.01	0.01	1.84	1.1	0.01	0.04	0.03	0.02
27.3.2014	-10.95	4.41	0	0.01	-0.04	0.06	0	0.01	0.4	1.56	-0.9	0.52	0.01	0.04
9.5.2014	-18.55	2.13	-0.03	0.02	-0.15	0.3	0	0.01	1.35	0.58	0.05	0.39	0.05	0.02
12.6.2014	-18.08	3.57	0.01	0.01	-0.05	0.23	0	0.01	0.24	0.99	-1.41	1.65	-0.12	0.32

BW conc Date	O ₂ mmol/l		NO _x mmol/l		NH ₄ ⁺ mmol/l		PO ₄ ³⁻ mmol/l		Si mmol/l		Fe mmol/l		Mn mmol/l	
	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD	mean	SD
5.6.2013	0.3	0	0	0	0.0002	0.0001	0	0.0001	<i>not analyzed</i>		0.0003	0.0003	<i>no samples</i>	
2.7.2013	0.28	0.01	0	0	0.0001	0	0	0.0001			0.0002	0.0001		
31.7.2013	0.32	0.01	0	0	0.0005	0.0001	0	0.0001	0.0071	0.0003	0.0006	0.0006	0.0002	0.0001
29.8.2013	0.28	0	0	0	0.0002	0.0001	0	0.0001	0.0089	0.0016	0.0001	0.0002	0.0001	0
30.9.2013	0.29	0	0.0001	0	0.0022	0.0002	0	0.0001	0.0093	0.0009	0.0001	0	0.0001	0
22.10.2013	0.27	0	0.0005	0	0.0007	0.0002	0	0.0003	0.0154	0.0025	0.0008	0.0006	0.0001	0
27.11.2013	0.34	0	0.0007	0	0.0002	0.0001	0	0.0003	0.0149	0.0007	0.0002	0.0002	0.0001	0
9.1.2014	0.37	0	0.0008	0	0.0003	0.0001	0	0.0003	0.013	0.0008	0.0001	0	0	0
27.3.2014	0.4	0	0.0005	0	0.0004	0	0	0.0001	0.0124	0.0009	0.0017	0.0007	0.0002	0
9.5.2014	0.38	0	0	0	0.0004	0.0003	0	0.0001	0.0042	0.0004	0.0008	0.0001	0.0002	0
12.6.2014	0.32	0	0	0	0.0004	0.0002	0	0.0001	0.0095	0.0009	0.0025	0.002	0.0005	0.0004

Environmental

Date	Temp °C	Salinity	pH	O ₂ mmol/l	C/N	LOI %	Mean no of taxa
5.6.2013	11.3	5.7	8.1	0.3	6.9	7.5	7
2.7.2013	8.9	6	7.2	0.28	7	7.9	6
31.7.2013	7.8	6.1	8.3	0.32	6.8	7.6	8
29.8.2013	11.7	6	7.6	0.28	7	10	8
30.9.2013	14	5.8	8	0.29	7.1	9.6	8
22.10.2013	6.6	6.6	7.3	0.27	7	8.6	7
27.11.2013	6.1	6.6	7.7	0.34	7.2	6.1	6
9.1.2014	3.7	6.3	7.7	0.37	7.6	5.5	7
27.3.2014	2.1	6	8	0.4	7.8	12.5	6
9.5.2014	5.5	6	8.2	0.38	7.1	11	8
12.6.2014	10.2	5.6	8	0.32	7	11.2	6

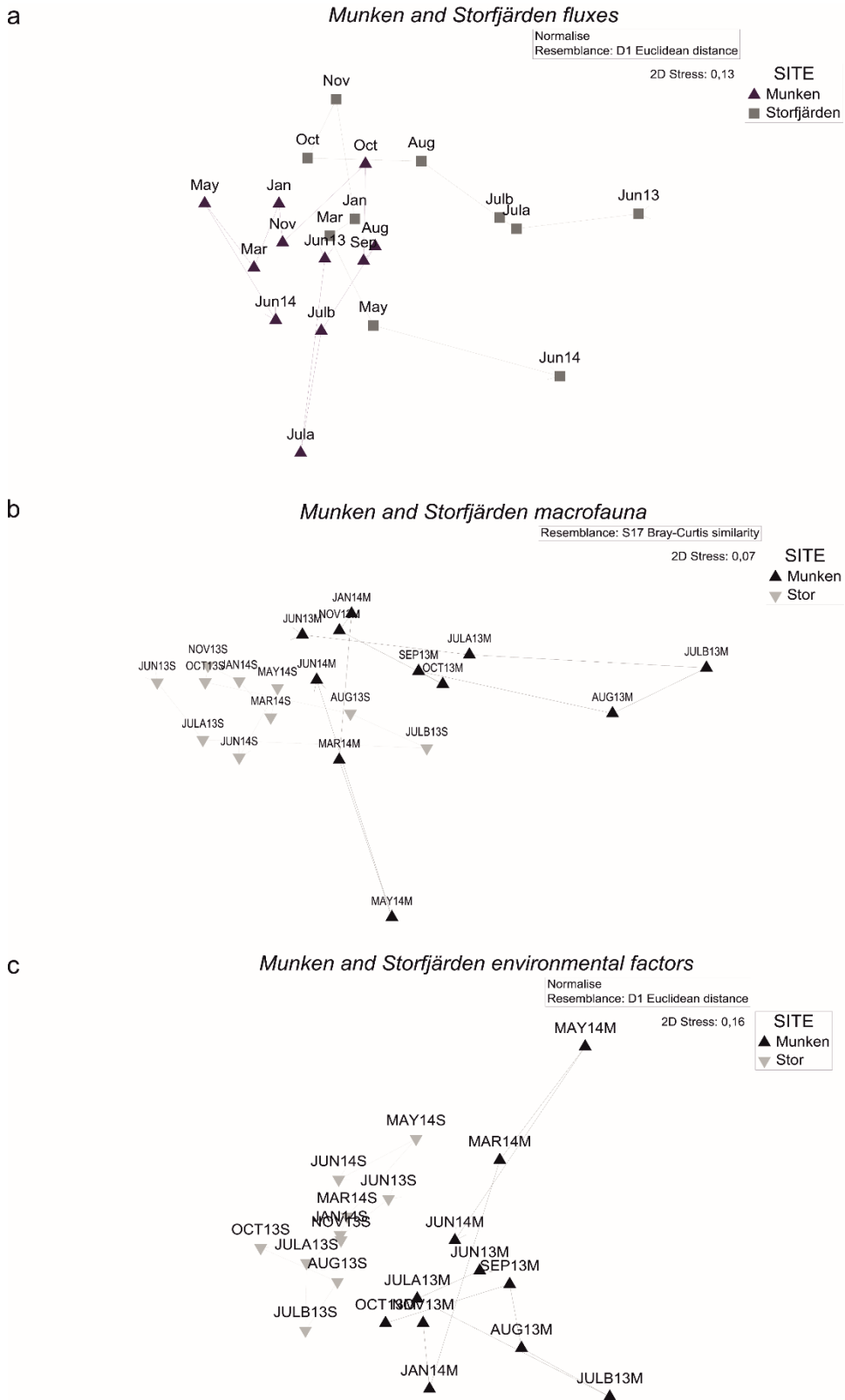


Figure S1. NMDS graphs of a) solute fluxes, b) macrofauna, and c) DistLM environmental predictor variables (including macrofauna) temperature, salinity, pH, LOI and C/N for Munken (10 m) and Storfjärden (33 m) from June 2013 to June 2014. Fluxes are normalized as in the DistLM analyses.

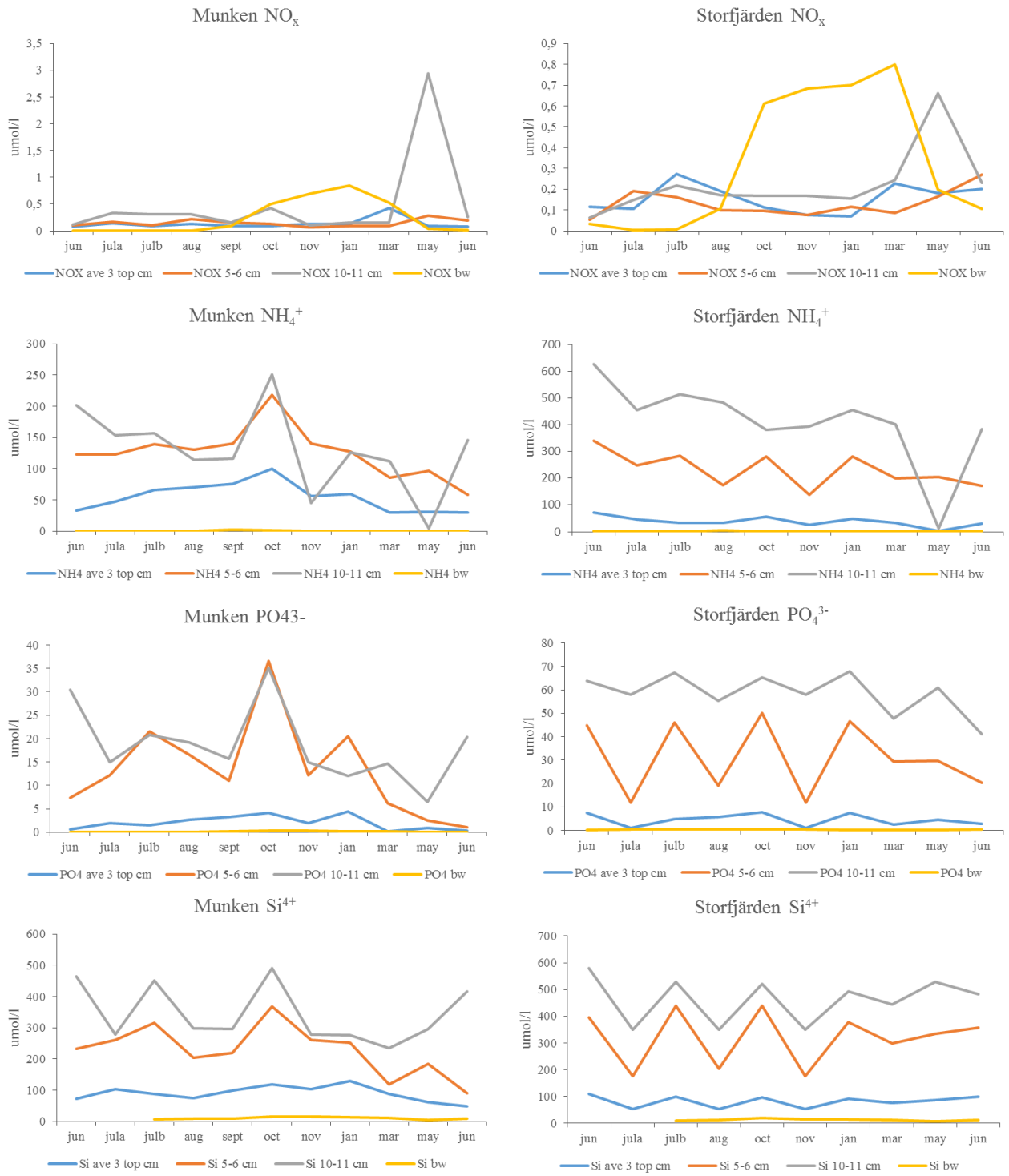


Fig. S2. Porewater and bottom-water concentrations of NO_x, NH₄⁺, PO₄³⁻ and Si⁴⁺ from June 2013 to June 2014. Blue line = average concentration in the upper three centimetres of sediment, orange line = concentration in the 5 to 6 cm sediment layer, grey line = concentration in the 10 to 11 cm sediment layer and yellow line = bottom water concentration (average from the five start samples).