

Supplementary Table S1. Spearman correlation coefficient between variables of biota and environmental factors. Significant correlations at $p < 0.05$ are marked by red. C is organic carbon in sediment, Am is survival rate of amphipods, S1 and S2 mean surface and bottom water salinity, O1 and O2 mean surface and bottom oxygen in water, P is total phosphorus, Ma is biomass of macroinvertebrates, NMe and BMe mean abundance and biomass of meiobenthos.

	C	Am	S1	S2	O1	O2	P	Cla	Ma	NMe	BMe
C	1.00	-0.29	-0.52	-0.52	0.06	0.02	0.23	-0.70	-0.80	-0.19	-0.13
Am	-0.29	1.00	0.08	0.08	0.18	0.17	-0.80	0.03	-0.07	0.01	-0.16
S1	-0.52	0.08	1.00	1.00	0.72	0.78	-0.14	0.63	0.67	0.04	-0.10
S2	-0.52	0.08	1.00	1.00	0.72	0.78	-0.14	0.63	0.67	0.04	-0.10
O1	0.06	0.18	0.72	0.72	1.00	0.95	-0.29	0.02	0.13	-0.41	-0.56
O2	0.02	0.17	0.78	0.78	0.95	1.00	-0.31	0.08	0.18	-0.22	-0.44
P	0.23	-0.80	-0.14	-0.14	-0.29	-0.31	1.00	0.14	0.16	0.27	0.46
Cla	-0.70	0.03	0.63	0.63	0.02	0.08	0.14	1.00	0.79	0.59	0.61
Ma	-0.80	-0.07	0.67	0.67	0.13	0.18	0.16	0.79	1.00	0.39	0.29
NMe	-0.19	0.01	0.04	0.04	-0.41	-0.22	0.27	0.59	0.39	1.00	0.92
BMe	-0.13	-0.16	-0.10	-0.10	-0.56	-0.44	0.46	0.61	0.29	0.92	1.00

Supplementary Table S2. List of benthic species and functional groups at study sites.

* Neva Bay includes sites 6 and 7, **Northern coast of the estuary sites 1-5 and ***Southern coast of the estuary sites 8-10. Functional groups: grazers (Gr), detritophagous (D), suspension and deposit-feeder (S), omnivores (Om), predaceous (Pr). Size group (SG): meiofauna (Me) and macrofauna (Ma).

Species	FG	SG	Neva Bay*	Northern estuary**	Southern estuary***
Nematoda					
<i>Brevitobrilus stephanskii</i> (Micoletzky) Tsal.	D	Me	+	+	+
<i>Chromadorita leucarti</i> (de Man)	D	Me	+	+	+
<i>Daptonema setosa</i> de Man	D	Me		+	+
<i>Dorylaimus stagnalis</i> Duyjarden	D, S	Me	+	+	+
<i>Epitobrilus medius</i> (G. Schneider) Tsal.	D	Me	+	+	+
<i>Ethmolaimus pratensis</i> de Man	D	Me	+	+	+
<i>Mononchus truncates</i> Bast	D	Me	+	+	+
<i>Neotobrilus longus</i> (Leidy)	D	Me	+	+	+
<i>Plectus</i> spp.	D, S	Me	+	+	+
<i>Pseudjincholaimus</i> sp.	D	Me		+	
<i>Raritobrilus steineri</i> (Steiner)	D, S	Me	+	+	+
<i>Tobrilus gracilis</i> (Bast)	D, S	Me		+	+
<i>Tripyla glomerans</i> Bastian	S, P	Me	+	+	+
Harpacticoida					
<i>Canthocamhtus staphylinus</i> Yurine	D	Me	+	+	+
Oligochaeta					
<i>Stylaria lacustris</i> (L)	D	Me	+	+	+
<i>Nais</i> spp	D	Me	+	+	+
<i>Paranais</i> spp.	D	Me	+		
<i>Amphicyaeta</i> spp.	D	Me	+		
<i>Uncinais uncinata</i> (Oersted)	D	Me	+	+	+
<i>Chaetogaster</i> spp.	D	Me	+	+	+
<i>Pristina</i> spp.	D	Me	+	+	+
<i>Pristinella bilobata</i> (Bretscher)	D	Me	+		
<i>Lumbricillus lineatus</i> (Muller)	D	Ma	+	+	+
<i>Enchytraeidae</i> genus sp.	D	Me	+		
<i>Tubifex tubifex</i> (Muller)	D	Ma	+	+	+
<i>Spirosperma ferox</i> Eisen	D	Ma	+	+	+
<i>Limnodrilus</i> spp.	D	Ma	+	+	+

<i>(L.claparedeanus</i> Ratzel, <i>L. hoffmeisteri</i> Claparede, <i>L. profundicula</i> (Verrill))					
Hirudinea					
<i>Erpobdella octoculata</i> (L)	Om	Ma	+	+	+
<i>Glossiphonia complanata</i>	Om	Ma	+	+	+
Amphipoda					
<i>Gmelinoides fasciatus</i> (Stebbing)	D	Maa	+	+	+
<i>Pontogammarus robustoides</i> (Sars)	D, P	Ma	+	+	+
<i>Gammarus tigrinus</i> Sexton	D,P	Ma		+	+
<i>Gammarus zaddachi</i> Sexton	Om	Ma		+	+
Isopoda					
<i>Asellus aquaticus</i> (L)	D	Ma	+	+	+
Bivalvia					
<i>Dreissena polymorpha</i> Pallas	D, S	Ma	+	+	+
<i>Pisidium inflatum</i> (Muehlfeld in Poro)	S	Ma			
<i>Sphaerium corneum</i> (L)	S	Ma			
<i>Anadonta anatina</i> (L)	S	Ma			
Gastropoda					
<i>Bythinia tentaculata</i> (L)	G	Ma	+	+	+
<i>Theodoxus fluviatilis</i> (L)	G	Ma		+	+
<i>Radix balthica</i> (L)	G	Ma	+	+	+
<i>Viviparus viviparus</i> (L)	G	Ma	+		
Ephemeroptera					
<i>Caenis undosa</i> Tiensuu	G,D	Ma	+	+	+
<i>Heptagenia sulphurea</i> (Müller)	G,D	Ma		+	+
<i>Siphonurus lacustris</i> (Eaton)	G,D	Ma	+		
<i>Ephemerella ignita</i> Poda	G,D	Ma	+		
Trichoptera					
<i>Agraylea multipunctata</i> Curt	G,D	Ma	+	+	+
<i>Athripsodes cinereus</i> Curt	G,D	Ma	+	+	
<i>Hydropsyche contubernalis</i> MacLachlan	Om	Ma	+	+	+
<i>Limnephilus</i> sp.	Om	Ma	+		
Chironominae					
<i>Tanytarsus</i> spp.	D	Me	+	+	+
<i>Cladotanytarsus</i> gr. <i>mancus</i>	D	Me	+	+	+
<i>Cryptochironomus</i> gr. <i>defectus</i>	D	Me	+	+	+
<i>Glyptotendipes</i> spp.	G, D	Ma	+	+	+
<i>Cricotopus</i> spp.	D	Me, Ma	+	+	+

<i>Microtendipes</i> gr. <i>pedellus</i>	D	Me, Ma	+	+	+
<i>Paratanytarsus austriacus</i> (Kieffer)	D	Me	+	+	+
<i>Chironomus</i> sp.	D	Ma	+	+	+
<i>Polypedilum</i> spp	D	Ma	+	+	+
<i>Psectrocladius</i> spp.	D	Ma	+	+	+

Supplementary Table S3. Biomass of various groups of benthic invertebrates g WW/ m² and the total biomass of meio- and macrobenthos at study sites.

Taxon	Site									
	1	2	3	4	5	6	7	8	9	10
Nematoda	0.02	0.01	0.1	0.01	0.01	0.002	0.006	0.001	0.01	0
Meiobenthos	0.43	0.76	0.74	0.29	0.29	0.03	0.01	0.3	0.24	0.01
Insecta	3.60	2.87	2.55	3.46	0.16	3.75	1.64	5.12	3.05	2.65
Mollusca	15.6	3	5.5	9	0.35	8.8	4.55	0	16.8	3.42
Crustaceans	4.4	4.8	2.5	2.25	5.74	0	1.96	0	2.8	17.86
others	1.1	5.76	2.5	1.5	4.92	0	0	0	0.2	2.82
Macrobenthos	24.7	9.57	4.64	5.76	3.2	4.26	2.52	5.82	5.09	29.4

Supplementary Table S4. *p*-values after Mann-Whitney pairwise comparisons for consumers, Bonferroni corrected. Biv is bivalvia, Gast – gastropoda, Trich –Trichoptera, Eph – ephemeroptera, Hir – hirudinea, Gam – gammaridae.

Consumers								
Carbon	Biv	Gast	Trich	Dipt	Eph	Hir	Gam	Fish
Biv	0	0.0161	0.005	0.0047	0.0050	0.0047	0.0050	0.0049
Gast	0.451	0	0.575	0.935	0.936	0.935	0.936	0.936
Trich	0.142	1	0	0.935	0.688	0.375	0.748	0.173
Dipt	0.134	1	1	0	0.936	0.935	0.518	0.936
Eph	0.142	1	1	1	0	0.809	0.471	0.422
Hir	0.134	1	1	1	1	0	0.567	0.169
Gam	0.142	1	1	1	1	1	0	0.172
Fish	0.14	1	1	1	1	1	1	0
Nitrogen	Biv	Gast	Trich	Dipt	Eph	Hir	Gam	Fish
Biv	0.0	0.030	0.936	0.0237	0.0102	0.0049	0.0127	0.00505
Gast	0.842	0.0	0.421	0.0047	0.0051	0.00499	0.0051	0.0051
Trich	1.0	1.0	0.0	0.935	0.228	0.00498	0.689	0.0051

Dipt	0.664	0.134	1.0	0.0	0.106	0.0047	0.935	0.0048
Eph	0.288	0.142	1.0	1.0	0.0	0.0049	0.228	0.0051
Hir	0.140	0.14	0.14	0.13	0.14	0.0	0.004	0.053
Gam	0.357	0.14	1.0	1.0	1.0	0.14	0.0	0.0051
Fish	0.142	0.142	0.142	0.134	0.142	1.0	0.142	0.0

Supplementary Figure S1. Coastal zone of the Neva estuary during macroalgae bloom.

