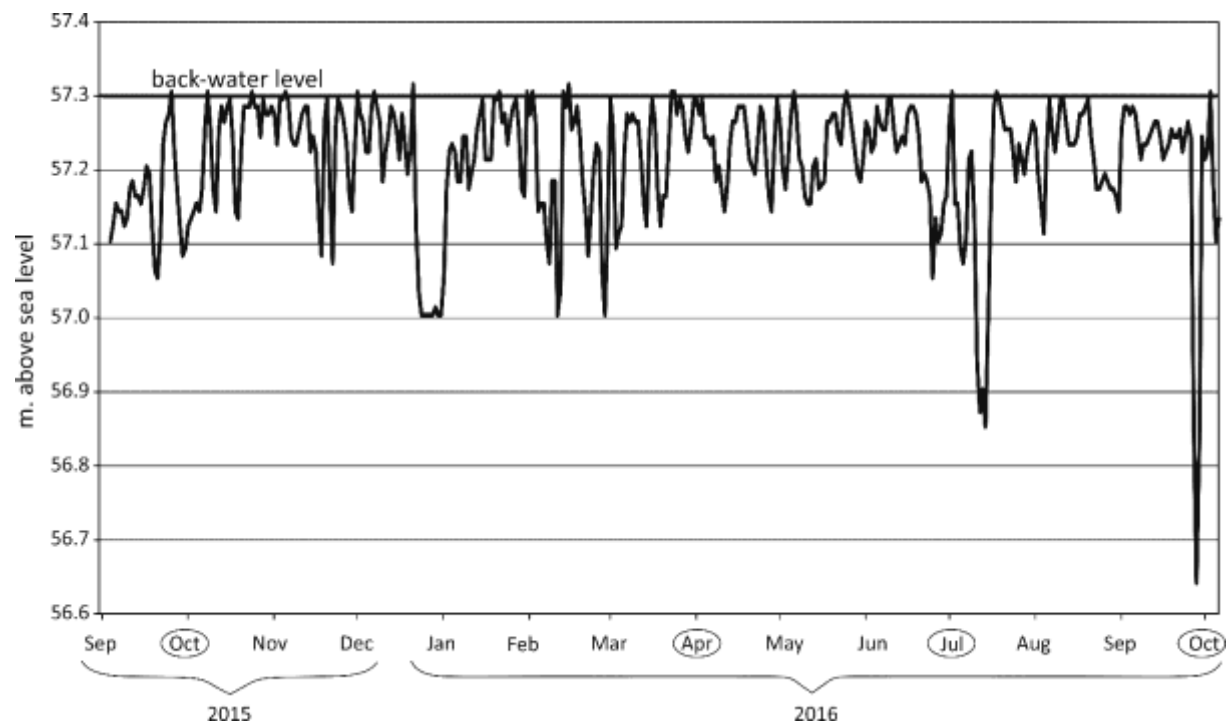


Supplementary materials

Supplementary material 1 Water level fluctuations in the Włocławek Dam Reservoir between 15 September 2015 and 18 October 2016. Data from the Polish Water Management “Polish Waters”, Regional Water Management Board in Warsaw, Poland.



Supplementary material 2 Density (ind m⁻²) of particular taxa, their percentage shares in the total zoobenthos density and numbers of macroinvertebrate taxa in the studied habitats

HABITATS	Sandy water line		Sand 0.2 m		Sand 0.5 m		Macrophytes		Stones	
	density	share	density	share	density	share	density	share	density	share
CHIRONOMIDAE	0	0.0	503	42.8	7139	53.2	6735	39.4	1271	6.3
<i>Stictochironomus sticticus</i> (Fabricius)	0	0.0	394	33.5	5053	37.6	5982	35.0	18	0.1
<i>Cladotanytarsus</i> sp. (<i>mancus</i> group)	0	0.0	83	7.1	1629	12.1	285	1.7	36	0.2
<i>Glyptotendipes</i> sp.	0	0.0	0	0.0	298	2.2	313	1.8	126	0.6
<i>Dicrotendipes</i> sp.	0	0.0	0	0.0	0	0.0	0	0.0	625	3.1
<i>Polypedilum</i> sp. (<i>nubeculosum</i> group)	0	0.0	25	2.1	0	0.0	25	0.1	36	0.2
<i>Cryptochironomus</i> sp.	0	0.0	0	0.0	20	0.2	45	0.3	0	0.0
<i>Tanytarsus</i> sp.	0	0.0	0	0.0	38	0.3	25	0.1	0	0.0
<i>Chironomus</i> sp.	0	0.0	0	0.0	0	0.0	20	0.1	0	0.0
<i>Endochironomus</i> sp. (<i>albipennis</i> group)	0	0.0	0	0.0	0	0.0	0	0.0	14	0.1
<i>Procladius</i> spp.	0	0.0	0	0.0	63	0.5	0	0.0	0	0.0
Orthoclaadiinae non det.	0	0.0	0	0.0	0	0.0	0	0.0	417	2.1
Chironomidae non det.	0	0.0	0	0.0	38	0.3	38	0.2	0	0.0
OLIGOCHAETA	409	88.7	396	33.7	5351	39.8	9040	52.9	96	0.5
<i>Potamothrix moldaviensis</i> (Vejd. et Mr.)	13	2.7	68	5.8	1558	11.6	2937	17.2	41	0.2
<i>Tubifex newaensis</i> (Mich.)	179	38.9	210	17.8	1086	8.1	1475	8.6	0	0.0
<i>Bothrioneurum vej dovskyanum</i> (Štolc)	76	16.4	15	1.3	157	1.2	61	0.4	0	0.0
<i>Limnodrilus hoffmeisteri</i> (Clap.)	13	2.7	20	1.7	260	1.9	535	3.1	0	0.0
<i>Limnodrilus claparedeanus</i> (Ratzel)	0	0.0	0	0.0	109	0.8	169	1.0	0	0.0
<i>Limnodrilus udekemianus</i> (Clap.)	0	0.0	0	0.0	68	0.5	15	0.1	0	0.0
Tubificidae juv. without hair chaetae	38	8.2	68	5.8	1508	11.2	3422	20.0	55	0.3
<i>Psammoryctides barbatus</i> (Grube)	0	0.0	0	0.0	477	3.6	313	1.8	0	0.0
<i>Psammoryctides albicola</i> or <i>maravicus</i>	0	0.0	0	0.0	25	0.2	0	0.0	0	0.0
Tubificidae juv. with hair chaetae	38	8.2	8	0.6	35	0.3	68	0.4	0	0.0
<i>Uncinaiis uncinata</i> (Oerst.)	0	0.0	0	0.0	33	0.2	45	0.3	0	0.0
<i>Paranais simplex</i> (Hrabe)	45	9.9	0	0.0	0	0.0	0	0.0	0	0.0
<i>Nais christinae</i> (Kasprzak)	0	0.0	0	0.0	13	0.1	0	0.0	0	0.0
Enchytraeidae juv.	8	1.6	8	0.6	23	0.2	0	0.0	0	0.0

MOLLUSCA	8	1.6	0	0.0	465	3.5	982	5.8	14806	73.1
GASTROPODA	0	0.0	0	0.0	283	2.1	707	4.1	2790	13.8
<i>Radix</i> sp.	0	0.0	0	0.0	109	0.8	167	1.0	1299	6.4
<i>Physa fontinalis</i> (L.)	0	0.0	0	0.0	0	0.0	0	0.0	232	1.1
<i>Ancylus fluviatilis</i> (O.F. Müller)	0	0.0	0	0.0	0	0.0	0	0.0	867	4.3
<i>Acroloxus lacustris</i> (L.)	0	0.0	0	0.0	0	0.0	0	0.0	205	1.0
<i>Gyraulus albus</i> (O.F. Müller)	0	0.0	0	0.0	0	0.0	0	0.0	5	0.0
<i>Planorbis planorbis</i> (L.)	0	0.0	0	0.0	0	0.0	0	0.0	5	0.0
<i>Potamopyrgus antipodarum</i> (Gray)	0	0.0	0	0.0	88	0.7	485	2.8	81	0.4
<i>Bithynia tentaculata</i> (L.)	0	0.0	0	0.0	40	0.3	15	0.1	77	0.4
<i>Viviparus viviparus</i> (L.)	0	0.0	0	0.0	38	0.3	33	0.2	9	0.0
<i>Borysthenia naticina</i> (Menke)	0	0.0	0	0.0	8	0.1	0	0.0	5	0.0
<i>Valvata piscinalis</i> (O.F. Müller)	0	0.0	0	0.0	0	0.0	8	0.0	0	0.0
<i>Valvata macrostoma</i> (Mörch)	0	0.0	0	0.0	0	0.0	0	0.0	5	0.0
BIVALVIA	8	1.6	0	0.0	182	1.4	275	1.6	12016	59.3
<i>Dreissena polymorpha</i> (Pall.)	0	0.0	0	0.0	43	0.3	66	0.4	11990	59.2
<i>Pisidium</i> sp.	0	0.0	0	0.0	86	0.6	38	0.2	0	0.0
<i>Pisidium amnicum</i> (O. F. Müller)	0	0.0	0	0.0	45	0.3	45	0.3	0	0.0
<i>Sphaerium</i> sp.	8	1.6	0	0.0	8	0.1	53	0.3	0	0.0
<i>Unio tumidus</i> (Philipsson)	0	0.0	0	0.0	0	0.0	66	0.4	26	0.1
Unionidae	0	0.0	0	0.0	0	0.0	8	0.0	0	0.0
AMPHIPODA	44	9.7	277	23.5	453	3.4	319	1.9	4063	20.1
<i>Pontogammarus robustoides</i> (G.O. Sars)	44	9.7	277	23.5	450	3.4	296	1.7	351	1.7
<i>Dikerogammarus villosus</i> (Sovinsky)	0	0.0	0	0.0	1	0.0	13	0.1	2318	11.4
<i>Dikerogammarus haemobaphes</i> (Eichwald)	0	0.0	0	0.0	0	0.0	1	0.0	10	0.1
<i>Dikerogammarus</i> juv.	0	0.0	0	0.0	2	0.0	6	0.0	900	4.4
<i>Echinogammarus ischnus</i> (Stebbing)	0	0.0	0	0.0	0	0.0	0	0.0	331	1.6
<i>Chelicorophium curvispinum</i> (G.O. Sars)	0	0.0	0	0.0	0	0.0	3	0.0	152	0.8
TRICHOPTERA	0	0.0	0	0.0	0	0.0	0	0.0	11	0.1
CERATOPOGONIDAE	0	0.0	0	0.0	0	0.0	23	0.1	0	0.0
NEMATODA	0	0.0	0	0.0	23	0.2	0	0.0	0	0.0
TOTAL	461	100.0	1176	100.0	13430	100.0	17076	100.0	20247	100.0
NUMBER OF TAXA	9		10		31		32		27	

Supplementary material 3 Results of the pairwise post-hoc contrasts of the significant effects of the two-way Generalized Linear Models on the impact of sampling date and habitat type on amphipod densities (see Tab. 2 for results). Asterisks indicate statistically significant results (after the sequential Bonferroni correction for multiple comparisons).

a. Comparisons among the habitat types							
Species/group	Date	Habitat	Bank	Sand 0.2 m	Sand 0.5 m	Plants	
<i>Pontogammarus robustoides</i>	Oct' 15	Sand 0.2 m	0.144				
		Sand 0.5 m	<0.001*	0.016			
		Plants	0.001*	0.082	0.490		
		Stones	0.006*	0.101	0.920	0.694	
	Apr' 16	Sand 0.2 m		0.370			
		Sand 0.5 m		0.037	0.220		
		Plants		0.320	0.927	0.251	
		Stones		0.624	0.709	0.826	0.717
	Jul' 16	Sand 0.2 m		0.240			
		Sand 0.5 m		0.494	0.626		
		Plants		0.530	0.585	0.954	
		Stones		0.811	0.349	0.655	0.697
	Oct' 16	Sand 0.2 m		0.005			
		Sand 0.5 m		<0.001*	0.130		
		Plants		<0.001*	0.144	0.964	
		Stones		<0.001*	<0.001*	<0.001*	<0.001*
<i>Dikerogammarus</i> spp. juveniles	All	Stones	<0.001*	<0.001*	<0.001*	<0.001*	
<i>Echinogammarus ischnus</i>	All but Jul' 16	Stones	<0.001*	<0.001*	<0.001*	<0.001*	
<i>Dikerogammarus villosus</i>	Oct' 15,	Plants	<0.001*	<0.001*	<0.001*		
	Apr' 16	Stones	<0.001*	<0.001*	<0.001*	<0.001*	
	Jul' 16,	Plants	0.008	0.008	0.008		
	Oct' 16	Stones	<0.001*	<0.001*	<0.001*	<0.001*	

b. Comparisons among the sampling dates						
Species	Habitat	Date	Oct' 15	Apr' 16	Jul' 16	
<i>Pontogammarus robustoides</i>	Bank	Apr' 16	0.086			
		Jul' 16	0.001*	0.114		
		Oct' 16	1.000	0.086	0.001*	
	Sand 0.2 m	Apr' 16		0.228		
		Jul' 16		0.002*	0.061	
		Oct' 16		0.203	0.956	0.066
	Sand 0.5 m	Apr' 16		0.992		
		Jul' 16		0.866	0.872	
		Oct' 16		0.737	0.743	0.868
	Plants	Apr' 16		0.658		
		Jul' 16		0.420	0.212	
		Oct' 16		0.325	0.154	0.859
	Stones	Apr' 16		0.812		
		Jul' 16		0.923	0.798	
		Oct' 16		<0.001*	<0.001*	<0.001*

<i>Dikerogammarus villosus</i>	Plants	Apr'16	0.075		
		Jul'16	0.001	0.106	
		Oct'16	0.001	0.106	1.000
	Stones	Apr'16	<0.001*		
		Jul'16	<0.001*	0.030	
		Oct'16	0.116	<0.001*	0.055
<i>Echinogammarus ischnus</i>	Stones	Apr'16	<0.001*		
		Jul'16	0.563	<0.001*	
		Oct'16	0.374	<0.001*	0.142

Supplementary material 4 Summary of relationships among amphipod and macroinvertebrate groups revealed by Generalized Linear Model analyses (Tab. 3)

	Pr					Dv		Djuv	Ei
	Bank	Sand 0.2 m	Sand 0.5 m	Plants	Stones	Plants	Stones	Stones	Stones
Pr						0	+	0	+
Dv				0	+			-	+
Ei					+		+	+	
Gastr		0	0	0	+	0	0	0	-
Dp		0	0	-	0	0	+	+	+
Sph		0	0	+		0			
Chir	0	0	0	+	+	0	+	0	0
Oli	0	0	0	+	0	0	-	0	+

+: positive relationship, -: negative relationship, 0: no relationship

Competitors/predators: Pr – *Pontogammarus robustoides*, Dv – *Dikerogammarus villosus*,

Djuv – *Dikerogammarus juveniles*, Ei – *Echinogammarus ischnus*, shelter providers: Gastr –

Gastropoda, Dp – *Dreissena polymorpha*, Sph – Sphaeriidae, Chir – Chironomidae, Oli –

Oligochaeta