

Supplementary Information

Table S1. Overview of the locations of the flush samples in the distribution system (DWDS) Zeeuws-Vlaanderen.

Part of DWDS	Location	Research period	Inner diameter (mm)	Pipe material	Year of construction of eldest part
Eastern section	Heikant	2011-2022	88	AC	1950
	Hulst	2011-2017	100	AC	1977
		2018-2022	113	AC	1900
	Nieuw Namen	2011-2022	88	AC	1950
Western section	Axel	2011-2018	100	PVC	1993
		2019-2022	106.7	PVC	1998
	Cadzand	2011-2022	100	AC	1979
	Philippine	2011-2022	106.7	PVC	1992

AC: asbeston cementon; PVC: polyvenylchlorid

Table S2. Sampling scheme, parameters and frequencies per location.

Sampling location	Parameter	Season	Number of samples per year	
Drinking water at treatment plant			TP#2	TP#9
	pH	whole year	52	26
	Fe	whole year	26	104
	Mn	whole year	26	104
	DOC	whole year	13	4
	BP LC-OCD	whole year	13-52 (since 2015)	4 (since 2020)
	Biomass ATP	whole year	52	13
	BPC ₁₄	whole year	26 (since 2019)	4 (since 2019)
	AOC A3	whole year	8 (since 2019)	4 (since 2020)
	AOC P17/NOX	whole year	8-13	1-4
Drinking water in DWDS			West section	East section
	Invertebrates	August - October	3	3
	Sediment volume	August - October	3	3
	Turbidity test	May-August	40	17
Drinking water at the tap of households			West section	East section
	Aeromonas at 30 °C	July-September	21-55	8-18
	Heterotrophic Plate Count at 22°C	July-September	26-98	8-27
	Fe	whole year	6	26

Table S3. ANOVA test (F-value, df1; df2 and p-value) of different parameters and comparison per period (Games-Howell post-hoc test, p-value).

Parameter	Zeeuws-Vlaanderen western section				Zeeuws-Vlaanderen eastern section			
	ANOVA	2011-2014 versus 2015- 2018	2011-2014 versus 2019- 2022	2015-2018 versus 2019- 2022	ANOVA	2011-2014 versus 2015- 2018	2011-2014 versus 2019- 2022	2015-2018 versus 2019- 2022
<i>Aeromonas</i> at 30 °C	F=5.88; df1 2; df 2 291; <0.01	n.s.	n.s	<0.01 15-18 > 19-22	F=65,3; df1 2; df2 101; <0.001	<0.001 15-18 > 11-14-	<0.001 19-22 > 11-14	<0.001 19-22 > 15-18
Heterotrophic Plate Count at 22°C	F=14.6; df1 2; df2 331; <0.001	<0.001 11-14 > 15-18	<0.001 11-14 > 19-22	n.s	F=35.6; df1 2; df2 133; <0.001	n.s.	<0.001 19-22 > 11-14	<0.001 19-22 > 15-18
Sediment volume 100 µm	F=0.126; 2 df; df2 22; n.s.				F=1.31; df1 2; df2 19; n.s.			
Invertebrate biomass	F=0.794; df1 2; df2 22; n.s.				F=7.88; df1 2; df2 19; <0.01	n.s.	<0.05 19-22 > 11-14	<0.01 19-22 > 15-18

Table S4. Results of the Mann-Whitney test of results of a drinking water turbidity test induced by an increase op the velocity with 0.25 m/s in the distribution pipes and the Fe concentrations in the sediment of flush samples of the DWDS; U-value = Test statistic of Mann-Whitney test; sd = standard deviation; n = number of samples.

Turbidity (2019-2021)	Western section	Eastern section
U-value	3077	
p-value	<0.001	
average±sd (FNU)	8.9±13.4	27.6±12.2
n	160	67

Fe in sediment of flush samples (2014-2022)	Western part	Eastern part
U-value	113	
p-value	<0.001	
AVERAGE ±sd (mg/L)	0.9±1.1	3.5±3.1
n	27	27

Table S5. Biomass (mg FW/m³) per taxon in the individual flush samples.

Section	Year	Location	Chydoridae	Halacaridae	nauplius larvae of copepods	Cyclopoida	Harpacticoida	<i>Asellus aquaticus</i>	Turbellaria	Oligochaeta	other invertebrates
East	2011	Nieuw-Namen	1.61				0.065			1.08	
		Hulst	0.163		0.103		0.870				
		Heikant	0.166		0.070		3.31		0.186	0.307	
	2012	Nieuw-Namen	22.9				0.162			6.91	
		Hulst	0.035	0.058			0.185			0.193	
		Heikant	0.064		0.040		2.88		0.107		
	2013	Nieuw-Namen	3.27		0.123		0.520			1.90	
		Hulst					0.816			0.680	
		Heikant		0.044			2.25				
	2014	Nieuw-Namen			0.031	0.164			0.166		
		Hulst			0.198	2.39	0.720				
		Heikant		0.042	1.17	7.35	1.14		0.169		
	2015	Nieuw-Namen	0.708	0.035						0.232	
		Hulst	0.042	0.070	0.184	2.50	0.890				
		Heikant	0.340	0.248			1.08				
	2016	Nieuw-Namen	0.267				0.071	1.649			
		Hulst		0.039	0.030	0.627	0.627				
		Heikant	0.039	0.131	0.025	0.131	1.735				
	2017	Nieuw-Namen	0.217				0.041	1.67		0.173	
		Hulst		0.032	0.024	0.388	1.60				
		Heikant		0.031			2.84				
	2018	Nieuw-Namen					0.041		0.207		
		Hulst		0.048	0.012		0.258				
		Heikant	0.019	0.032	0.012		1.44			0.328	
	2019	Nieuw-Namen			0.034	0.647	0.036				
		Hulst		0.980	0.392	4.73	0.230	89.9	2.21		
		Heikant		0.021	0.063	0.499	2.10	43.7	0.504		
	2020	Nieuw-Namen	0.144	0.359	0.090	1.45	0.191	23.2	0.483	2.40	0.048
		Hulst		0.235		0.422		33.3	0.949	0.017	
		Heikant			0.047	0.617	0.049	160	0.499		
	2021	Nieuw-Namen	0.475	0.213		1.50	0.617	13.6	1.02	2.30	
		Hulst	0.055	0.017		0.574		27.0	0.602	0.038	
		Heikant		0.014		1.52	0.033	270	0.302		
	2022	Nieuw-Namen		0.009		0.012	0.020		0.025		
		Hulst	0.003	0.031		0.101	0.004	62.2	0.102	0.094	
		Heikant				2.14	0.027	395	0.101		

Table S5. Continued

Section	Year	Location	Chydoridae	Halacaridae	nauplius larvae of copepods	Cyclopoida	Harpacticoida	<i>Aesellus aquaticus</i>	Turbellaria	Oligochaeta	other invertebrates
West	2011	Phillipine	0.147	0.041		0.164					
		Axel	0.879		0.111	0.586	0.059		0.148		0.001
		Cadzand	0.142	0.512	0.089	1.10	0.000				0.001
	2012	Phillipine	5.66	0.319	0.134	0.568	0.114				
		Axel	16.0		0.702	7.11	0.904			0.539	
		Cadzand	0.079	0.427	0.423	0.404					
	2013	Phillipine	0.049	0.205	0.217	0.818					
		Axel		0.161	0.637	4.010					
		Cadzand		0.220	0.359	0.878	0.058				
	2014	Phillipine	0.840	0.105	0.212	3.22				0.234	0.014
		Axel	1.93	0.345	0.167	5.41	0.101				
		Cadzand	4.14	0.065	0.024	0.129	0.828	3.29			
	2015	Phillipine	0.743	0.034		0.825	0.000				
		Axel	19.2	0.354	0.803	7.72	1.95		0.159		
		Cadzand	4.66	0.062	0.186	0.740	4.59		0.125	0.206	
	2016	Phillipine	1.47	0.254		0.845	0.473			0.016	
		Axel		0.270	0.522	5.01	25.2		0.243		
		Cadzand	1.11	0.103	0.026	0.275	0.440				
	2017	Phillipine	0.104	0.489			0.046				
		Axel	0.102	0.085	0.686	1.74	9.40		0.688		
		Cadzand	1.27	0.061	0.062	0.417	0.260				
	2018	Phillipine		0.299	0.011	0.229	0.000				
		Axel		0.045	0.170	3.11	3.95				
		Cadzand		0.028	0.234	1.71	0.045		0.057		
	2019	Phillipine	0.075	0.104	0.047	0.417	0.267			0.139	
		Axel		0.068	0.188	1.92	0.289		1.19	1.66	0.018
		Cadzand	0.061						0.215		
	2020	Phillipine	0.281	0.059			0.562		0.236	0.196	
		Axel			0.024	0.376	0.050		0.380		
		Cadzand					0.145		0.548		
	2021	Phillipine	1.18	0.159		0.080	4.59		0.684	0.266	
		Axel		0.007		2.29	0.068		0.029	0.283	
		Cadzand		0.311		0.493	0.034		2.38	0.036	
	2022	Phillipine	0.601	0.276			6.16		0.279		
		Axel		0.017		2.85	0.194		0.110	5.95	
		Cadzand		0.039		0.268	0.009		0.890	0.317	

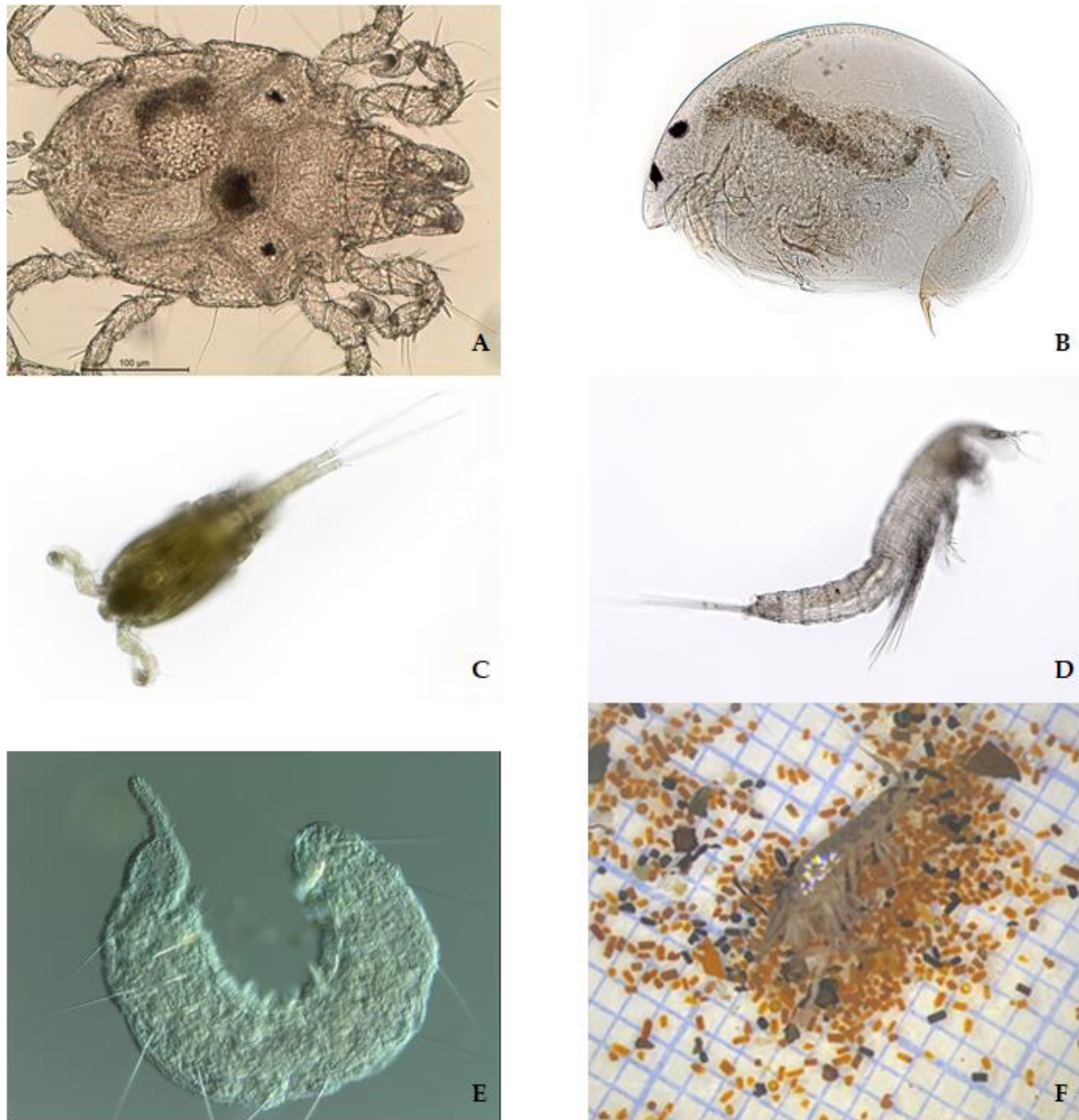


Figure S1. Photos of the most relevant invertebrate taxa in the DWDSs.

A: *Soldanellonyx monardi* (Halacaridae adult); B: *Phreatalona protzi* (Chydoridae); C : *Eucyclops serrulatus* (Cyclopoida, male); D: *Nitokra hibernica* (Harpacticoida); E: *Pristina* sp. (Oligochaeta); F: *Asellus aquaticus* and fecal pellets (Isopoda).

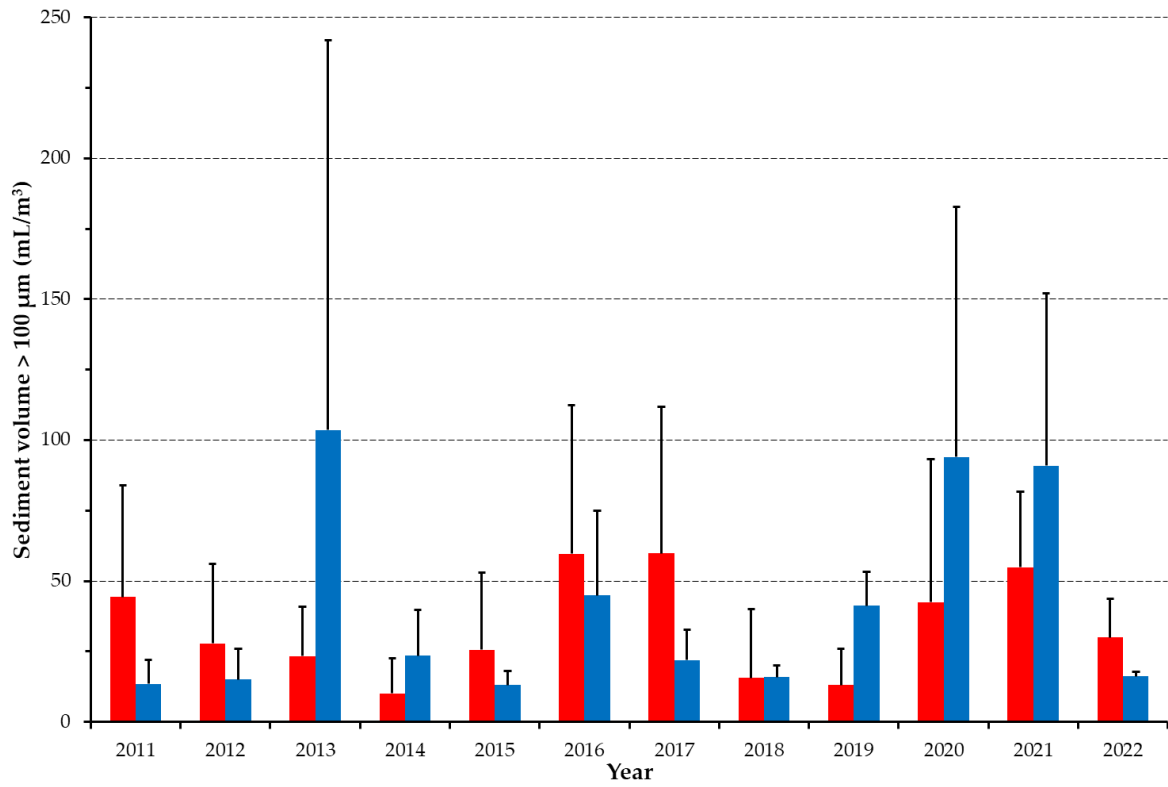


Figure S2. Average (with standard deviation, $n=3$) sediment volume larger than 100 μm in the eastern section of the DWDS (■) and in the western section of the DWDS (■).

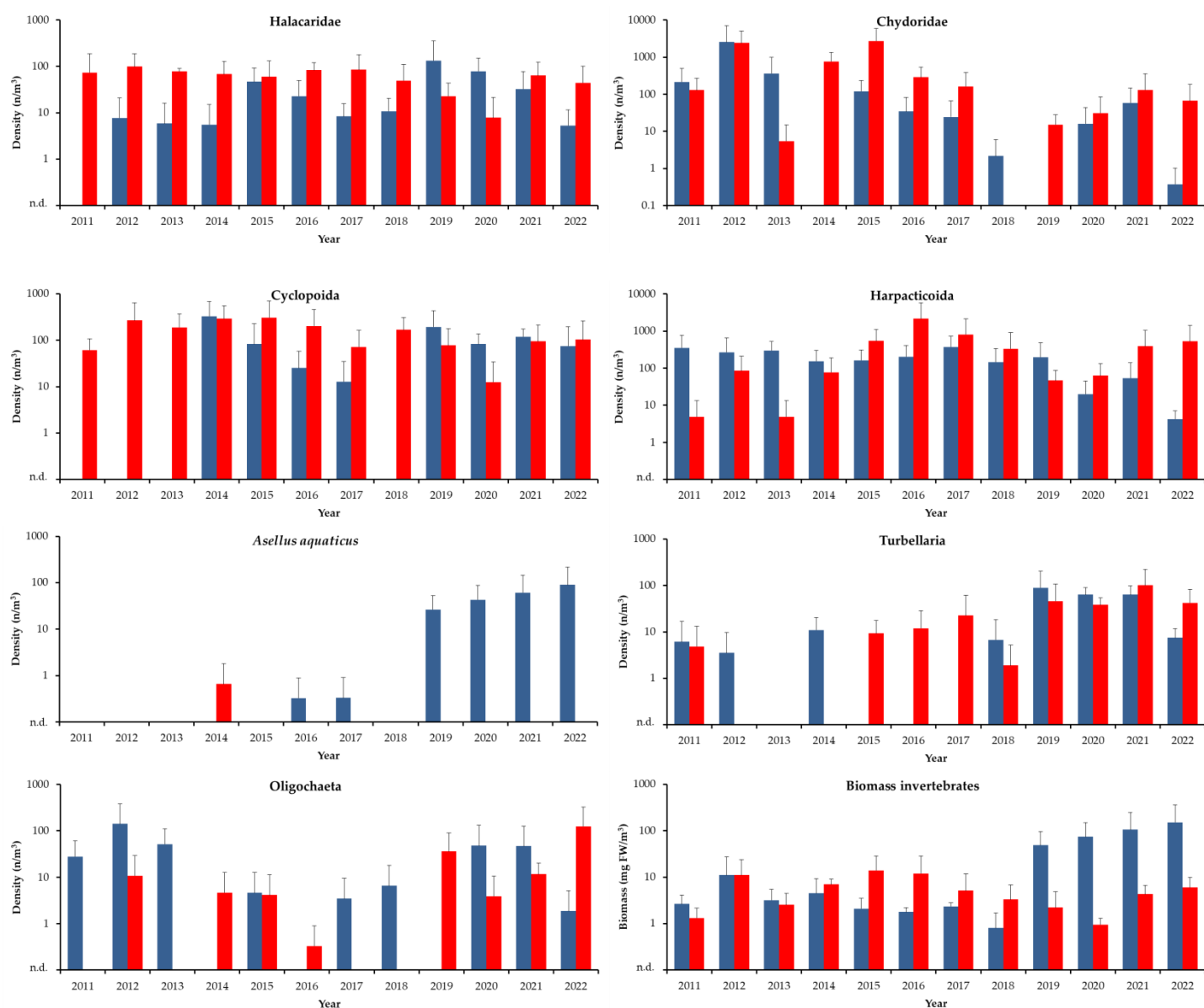


Figure S3. Average with standard deviation density of relevant invertebrates and biomass in flush samples per year in the eastern section of the DWDS (■) and in the western section of the DWDS (■). n.d.: not detected.