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SUPPLEMENTARY MATERIAL

Management implications following the reconstruction of the small and shallow Lake Mustijärv (Estonia)

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Tab. S1. The concentrations of total phosphorus (TP), total nitrogen (TN), total iron (TFe), dissolved iron (DFe), soluble reactive phosphorus (SRP), nitrate nitrogen (NO₃⁻-N), ammonium nitrogen (NH₄⁺-N) and biological oxygen demand (BOD₅) in mg L⁻¹ in the surface (surf) and near-bottom water layer (bot) at three sampling sites of Lake Mustijärvi in 2018. Also temperature (temp, in °C) and dissolved oxygen (DO in mg L⁻¹) data are presented.

Date	Site	TFe surf	TFe bot	DFe surf	DFe bot	TN surf	TN bot	NH ₄ N surf	NH ₄ N bot	NO ₃ N surf	NO ₃ N bot	TP surf	TP bot	SRP surf	SRP bot	BOD ₅ surf	BOD ₅ bot	DO surf	DO bot	temp surf	temp bot
June 20	CE	0.16	0.24	0.02	0.02	0.74	0.86	0.073	0.065	0.01	0.011	0.11	0.12	0.045	0.055	4.3	4.2	11.8	0.6	18.8	14.9
June 20	OF	0.19	0.2	0.02	0.02	0.63	0.69	0.056	0.054	0.01	0.01	0.097	0.092	0.041	0.036	3.1	3.4	9.71	3.56	19.6	18.7
June 20	IF	0.22	0.25	0.021	0.02	1.1	0.65	0.022	0.035	0.01	0.011	0.096	0.11	0.033	0.042	4	4.6	11.8	1.36	19.6	18.8
July 25	CE	0.19	0.31	0.11	0.12	1.6	1.8	0.34	0.62	0.14	0.17	0.13	0.18	0.065	0.11	6.2	6.4	11.36	0.42	25.2	12.4
July 25	OF	0.18	0.18	0.098	0.091	1.5	1.5	0.28	0.27	0.13	0.14	0.12	0.12	0.06	0.065	8.5	8.4	12.12	0.9	25.2	21.4
July 25	IF	0.18	0.21	0.11	0.12	1.3	1.9	0.29	0.51	0.14	0.12	0.11	0.2	0.048	0.055	6.3	7.8	11.2	0.53	24.6	18.6
August 20	CE	0.15	0.33	0.088	0.21	0.89	1.2	0.052	0.087	0.01	0.01	0.19	0.24	0.1	0.14	6.2	6.6	13.8	0.46	20.3	13.1
August 20	OF	0.13	0.14	0.083	0.086	0.96	1	0.12	0.11	0.045	0.024	0.16	0.16	0.093	0.091	4.9	4.8	10.8	1.48	20.4	19.9
August 20	IF	0.15	0.23	0.087	0.12	1.5	1.5	0.078	0.26	0.015		0.28	0.28	0.14	0.19	7.7	6.3	13.8	0.27	20.3	13.8
September 26	CE	0.26	0.28	0.08	0.082	1.8	1.7	0.62	0.62	0.13	0.13	0.27	0.27	0.13	0.13	7.2	7.6	9.2	6.95	12.72	12.55
September 26	OF	0.23	0.22	0.071	0.076	1.8	1.8	0.53	0.57	0.12	0.13	0.24	0.24	0.12	0.13	6.9	8.3	8.39	8.19	12.55	12.55
September 26	IF	0.28	0.26	0.073	0.073	1.7	1.7	0.58	0.57	0.13	0.13	0.26	0.26	0.13	0.13	7.7	7.4	9.95	9.8	12.55	12.5
October 16	CE	0.2	0.22	0.022	0.038	2.3	2.3	0.28	0.39	1.1	1.2	0.11	0.097	0.079	0.066	3.8	2.1	11	8.66	10.7	9.54
October 16	OF	0.17	0.17	0.022	0.026	2.3	2.2	0.28	0.29	1.2	1.2	0.095	0.11	0.067	0.062	2.6	2.2	10	9.03	10.7	9.34
October 16	IF	0.22	0.22	0.025	0.03	2.4	2.3	0.36	0.37	1.2	1.2	0.12	0.1	0.075	0.086	3.4	2.9	9.87	9.7	9.57	9.96

Tab. S2. The phytoplankton variables determined from the samples collected at three sampling sites of Lake Mustijärvi including biomass of cyanobacteria (CY), diatoms (BAC), chlorophytes (CHL), chrysophytes (CHR), cryptophytes (CRYP), dinophytes (DINO), xanthophytes (Xan), euglenoids (Eu), phytoplankton biomass (FBM), number of phytoplankton species (FLA), concentration of chlorophyll a (ChlaJH), concentration of chlorophyll b (Chlb), concentration of chlorophyll c (Chlc), (ChlaL), phaeopigments (Pha), carotenoids (Car), chlorophyll a % in the phytoplankton (Chl%). Values for the biomass are given in mg L⁻¹ and pigments in µg L⁻¹.

Date	Site	FBM	FLA FDOM	CY	BAC	CHL	CHR	CRYP	DINO	Xan	Eu	ChlaJH	ChlbJH	ChlcJH	ChlaL	Pha	Car	Chl %
Jun 20	CE	8.29	51 cryptophytes, <i>Dinobryon divergens</i> O.E.Imhof, <i>Closteriopsis longissima</i> (Lemm.) L.	0.176	1.343	2.792	0.978	2.099	0.527	0	0.375	39.58	7.38	5.73	26.03	21.63	11.67	0.48
Jun 20	OF	5.906	58 Cyclotella discoids, <i>Dinobryon divergens</i> , cryptophytes, <i>Closteriopsis longissima</i>	0.032	1.715	1.973	1.239	0.612	0.3	0.024	0.011	26.65	1.55	3.86	16.69	15.55	8.54	0.45
Jun 20	IF	6.766	49 Cyclotella discoids, <i>Dinobryon divergens</i> , cryptophytes, <i>Closteriopsis longissima</i>	0.008	1.977	2.229	0.983	0.92	0.47	0.027	0.152	31.96	2.78	5.23	24.70	10.81	11.10	0.47
Jul 25	CE	9.638	63 <i>Peridinium</i> spp., cryptophytes, euglenoids	0.374	0.145	0.8	0.033	1.599	5.934	0.009	0.744	72.04	9.43	9.12	63.75	11.01	23.41	0.75
Jul 25	OF	9.64	53 <i>Peridinium</i> spp., cryptophytes, euglenoids	0.129	0.445	1.631	0.007	1.259	5.246	0	0.923	55.56	0.00	10.83	52.73	1.47	29.69	0.58
Jul 25	IF	9.803	49 <i>Peridinium</i> spp., crptophytes, euglenoids	0.068	0.039	1.416	0.003	1.084	5.479	0	1.714	46.88	1.23	8.13	40.72	7.88	22.26	0.48
Aug 20	CE	31.087	57 <i>Chlamydomonas</i> spp., <i>Peridinium</i> spp.	2.6	0.218	11.079	0.017	1.089	14.066	0	2.018	113.10	14.36	14.94	94.12	27.37	50.62	0.36
Aug 20	OF	31.971	46 <i>Chlamydomonas</i> spp., <i>Peridinium</i> spp.	1.707	0.039	13.853	0.014	0.746	14.697	0.003	0.912	64.33	3.91	10.37	56.07	10.75	31.34	0.20
Aug 20	IF	44.226	47 <i>Chlamydomonas</i> spp., <i>Peridinium</i> spp., euglenoids	1.892	0.049	16.274	0.087	0.248	21.187	0.008	4.481	126.24	6.69	21.81	113.72	14.72	61.02	0.29
Sep 26	CE	24.403	39 <i>Pseudanabaena limnetica</i> (Lemm.) Kom., cryptophytes	17.438	0.409	1.369	0.599	4.272	0.047	0	0.269	96.60	0.00	12.69	66.08	45.59	46.72	0.40
Sep 26	OF	27.629	38 <i>Pseudanabaena limnetica</i> , cryptophytes	21.609	0.709	1.638	0.08	3.477	0	0.003	0.113	81.80	0.00	10.36	11.35	114.34	39.19	0.30
Sep 26	IF	28.691	36 <i>Pseudanabaena limnetica</i> , cryptophytes	19.601	0.393	3.149	0.595	4.1	0.142	0	0.711	95.42	0.00	12.25	62.75	49.40	46.05	0.33
Oct 16	CE	11.939	31 <i>Synura</i> sp., cryptophytes	0.035	0.077	0.301	7.438	3.983	0.06	0	0.045	31.85	0.00	5.56	27.59	5.12	12.90	0.27
Oct 16	OF	16.318	30 <i>Synura</i> sp., cryptophytes	0.073	0.136	0.116	11.476	4.407	0.076	0	0.034	24.76	0.00	4.74	21.81	3.43	10.18	0.15
Oct 16	IF	12.114	31 <i>Synura</i> sp., cryptophytes	0.03	0.267	0.229	7.464	4.136	0	0	0.018	31.63	0.00	5.46	29.82	1.02	11.77	0.26

Tab. S3. The zooplankton variables determined from the samples collected at three sampling sites of Lake Mustijärvi including number of zooplankton species (ZSp), zooplankton abundance (ZA), zooplankton biomass (ZB), zooplankton weight (ZW); abundance of copepods (COPA), rotifers (ROTA), cladocerans (CLADA), biomass of copepods (COPB), rotifers (ROTB), cladocerans (CLADB), weight of copepods (COPW), weight of rotifers (ROTW), weight of cladocerans (CLADW). Abundances are given in ind L⁻¹ and biomasses in mg L⁻¹.

Date	Site	Zspe	ZA	ZB	ZW	ZADOM	ZBDOM	COPA	ROTA	CLADA	COPB	ROTB	CLADB	COPW	ROTW	CLADW
Jun 20	IF	13	1885	0.783	0.4	<i>Polyarthra luminosa</i> Kutikova, 1962 45%	<i>Asplanchna</i> spp. 38%; <i>P. luminosa</i> 24%; <i>Bosmina longirostris</i> (O.F. Müller, 1985) 21%	48	1778	60	0.017	0.588	0.179	0.4	0.3	3.0
Jun 20	CE	10	1950	0.868	0.4	<i>P. luminosa</i> 38%	<i>B. longirostris</i> 50%	43	1753	155	0.031	0.373	0.463	0.7	0.2	3.0
Jun 20	OF	11	1815	0.577	0.3	<i>P. luminosa</i> 29%; <i>Keratella cochlearis</i> (Gosse, 1851) 25%	<i>Asplanchna</i> spp. 42%	58	1738	20	0.047	0.457	0.072	0.8	0.3	3.6
Jul 25	IF	12	4500	1.941	0.4	<i>P. luminosa</i> 25%; <i>Filinia longisetata</i> (Ehrenberg, 1834) 23%	<i>Asplanchna</i> spp. 35%; <i>B. longirostris</i> 26%	15	4273	213	0.010	1.429	0.502	0.6	0.3	2.4
Jul 25	CE	17	5048	3.748	0.7	<i>P. luminosa</i> 33%	<i>Asplanchna</i> spp. 76%	28	4855	165	0.053	3.457	0.238	1.9	0.7	1.4
Jul 25	OF	13	2158	0.506	0.2	missing (<i>P. luminosa</i> 19%; <i>Keratella cochlearis tecta</i> (Gosse, 1851) 19%)	<i>Asplanchna</i> spp. 32%	0	1935	35	0	0.440	0.034		0.2	1.0
Aug 20	IF	14	7220	13.928	1.9	<i>Asplanchna</i> spp. 37%	<i>Asplanchna</i> spp. 96%	85	7010	125	0.033	13.738	0.157	0.4	2.0	1.3
Aug 20	CE	15	2600	1.834	0.7	missing (<i>K. c. tecta</i> 16%)	<i>Asplanchna</i> spp., 60%; <i>B. longirostris</i> 27%	40	2305	255	0.033	1.298	0.503	0.8	0.6	2.0
Aug 20	OF	14	3535	1.974	0.6	missing (<i>Brachionus angularis</i> Gosse 1851 19%; <i>Polyarthra remata</i> Skorikov, 1896 18%)	<i>Asplanchna</i> spp. 78%	20	3400	115	0.002	1.844	0.127	0.1	0.5	1.1
Sep 26	IF	12	6020	1.803	0.3	<i>K. cochlearis</i> 24%; <i>P. remata</i> 23%	<i>Synchaeta pectinata</i> Ehrenberg, 1832 39%; <i>B. longirostris</i> 21%	5	5765	250	0.001	1.419	0.383	0.3	0.2	1.5
Sep 26	CE	11	8830	2.468	0.3	<i>K. cochlearis</i> 40%	<i>S. pectinata</i> 29%; <i>Asplanchna</i> spp. 21%	25	8655	150	0.019	2.026	0.422	0.8	0.2	2.8
Sep 26	OF	14	9773	2.718	0.3	<i>K. cochlearis</i> 38%	<i>Asplanchna</i> spp. 29%; <i>S. pectinata</i> 21%	38	9548	188	0.020	2.324	0.375	0.5	0.2	2.0
Oct 16	IF	9	245	0.081	0.3	<i>P. luminosa</i> 42%	<i>S. pectinata</i> 34%; <i>P. luminosa</i> 25%	5	238	3	0.006	0.068	0.008	1.2	0.3	3.1
Oct 16	CE	9	188	0.047	0.2	<i>K. cochlearis</i> 28%; <i>P. luminosa</i> 28%	<i>S. pectinata</i> 26%; <i>P. luminosa</i> 22%; <i>B. longirostris</i> 21%	0	185	3	0	0.037	0.010		0.2	3.9
Oct 16	OF	11	503	0.102	0.2	<i>K. cochlearis</i> 54%	<i>S. pectinata</i> 28%; <i>Asplanchna</i> spp. 23%	5	495	3	0.004	0.096	0.002	0.7	0.2	1.0

Tab. S5. Macrophyte species and their abundance according to the scale: 1 – single plants; 2 – here and there at moderate amount; 3 – frequent at average amount; 4 – many and dominating or sub-dominating; 5 – very abundant dominating.

Species	Abundance
Emergent plants	
<i>Phragmites australis</i> (Cav.) Trin. ex Steud.	4
<i>Bidens cernua</i> L.	2
<i>Epilobium hirsutum</i> L.	2
<i>Epilobium palustre</i> L.	1
<i>Alisma plantago-aquatica</i> L.	3
<i>Phalaris arundinacea</i> L.	3
<i>Lycopus europaeus</i> L.	2
<i>Typha latifolia</i> L.	4
<i>Carex pseudocyperus</i> L.	1
<i>Bidens tripartita</i> L.	1
<i>Glyceria maxima</i> (Hartm.) Holmb.	1
<i>Lythrum salicaria</i> L.	1
<i>Myosotis scorpioides</i> L.	3
<i>Sparganium erectum</i> L. s.str.	1
<i>Schoenoplectus lacustris</i> (L.) Palla	1
<i>Solanum dulcamara</i> L.	2
Floating macrophytes	
<i>Sparganium emersum</i> Rehmann	1
<i>Lemna minor</i> L.	4
<i>Lemna trisulca</i> L.	3
<i>Spirodela polyrhiza</i> (L.) Schleid.	1
<i>Potamogeton natans</i> L.	3
<i>Polygonum amphibium</i> L.	1
Submerged macrophytes	
<i>Potamogeton pectinatus</i> L.	4
<i>Potamogeton berchtoldii</i> Fieber	4
<i>Ceratophyllum demersum</i> L.	2
<i>Callitriche hermaphroditica</i> Jusl.	2
Filamentous algae	3

Tab. S6. Parameters describing fish community in Lake Mustijärv in September 2018.

Species	CPUE (ind net ⁻¹ 12 h ⁻¹)	CPUE (g net ⁻¹ 12h ⁻¹)	Condition factor
	ind	g	
Sunbleak, <i>Leucaspis delineatus</i> (Heckel)	74.5	161.8	1.51
Roach, <i>Rutilus rutilus</i> (L.)	4.5	152.5	1.86
Perch, <i>Perca fluviatilis</i> L.	6.5	330	2.14
Pike, <i>Esox lucius</i> L.	0.5	525	0.82
Total	86	1169.3	