

Supplementary material

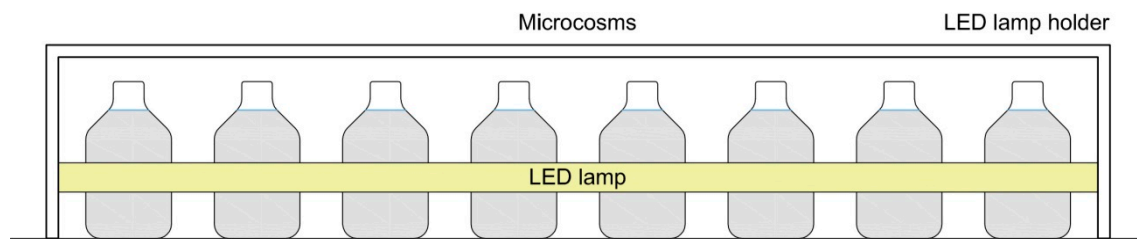


Figure S1. Schematic of the water phase microcosm setup.

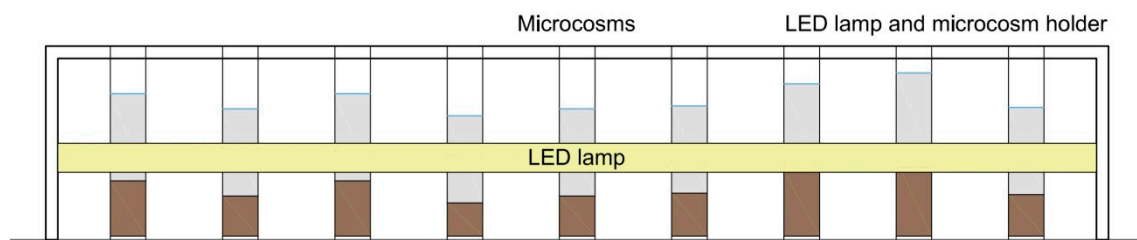


Figure S2. Schematic of the sediment microcosm setup.

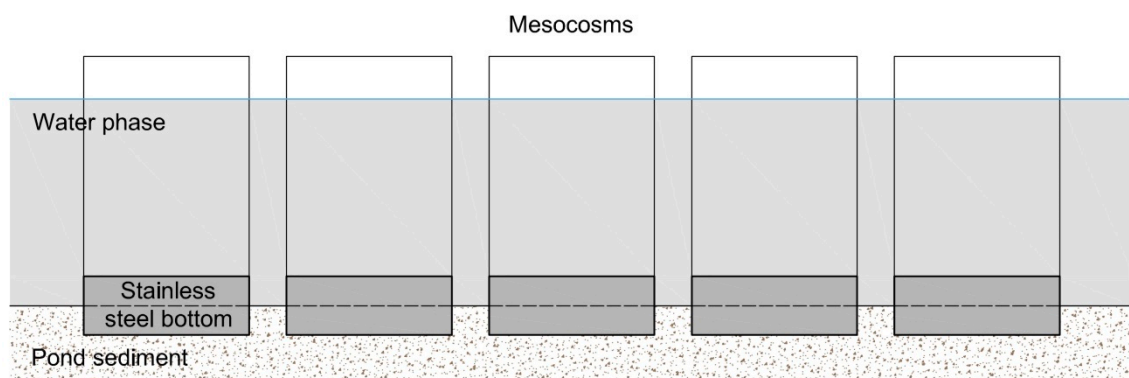


Figure S3. Schematic of the *in-situ* mesocosm setup.

Table S1. Concentrations of NO₃+NO₂-N, total phosphorus (TP), dissolved reactive phosphorus (DRP), chlorophyll-*a*, and dissolved oxygen (DO), conductivity, pH, as well as concentrations of biocides carbendazim (CD), diuron (DR), terbutryn (TB) and irgarol (IRG), measured at the beginning (day 0, water sample collected from the pond) and at the end (day 10) of the water phase microcosm experiment. NA – not analyzed or not available.

Sample ID	Water Quality Parameters							Biocide Concentrations, ng L ⁻¹			
	NO ₃ +NO ₂ -N, µg L ⁻¹	TP, µg L ⁻¹	DRP, µg L ⁻¹	Chlorophyll- <i>a</i> , µg L ⁻¹	DO, mg L ⁻¹	Conductivity, µS cm ⁻¹	pH	CD	IRG	TB	DR
Day0	667(±0.006)	131(±4.84)	11(±3.9)	63 (±1.4)	NA	NA	NA	6.4(±1.1)	<LOD	5.6(±0.4)	<LOD
Control1	650	55	17	26	8.71	488	6.72	<LOD	<LOD	5.9	<LOD
Control2	520	42	23	37	8.76	479	6.86	<LOD	<LOD	5.5	<LOD
Control3	470	44	10	23	8.76	478	6.82	<LOD	<LOD	7	<LOD
CD10	370	88	9	41	8.6	476	7.1	<LOD	<LOD	6.3	<LOD
CD100	450	68	14	36	8.6	480	7.09	83	<LOD	<LOD	<LOD
CD1000	420	80	10	31	8.6	486	6.99	807	<LOD	<LOD	<LOD
IRG10	510	79	2	21	8.58	478	6.85	3.5	<LOD	11.9	<LOD
IRG100	470	104	16	31	8.56	478	6.79	<LOD	37	<LOD	<LOD
IRG1000	430	93	10	39	8.81	483	6.89	<LOD	513	<LOD	<LOD
TB10	140	44	4	35	8.62	482	6.75	8.6	<LOD	11.2	<LOD
TB100	460	56	3	30	8.69	477	6.69	<LOD	<LOD	67	<LOD
TB1000	520	66	3	26	8.5	481	6.87	<LOD	<LOD	816	<LOD
DR10	320	80	7	36	8.54	481	6.92	3	<LOD	5.3	<LOD
DR100	460	75	23	31	8.41	481	6.9	NA	NA	NA	NA
DR1000	590	80	16	23	8.45	478	6.96	<LOD	<LOD	<LOD	748
MIX10	460	79	26	33	8.39	482	6.82	9.4	3.2	11.1	<LOD
MIX100	470	79	23	32	8.58	480	6.86	80	86	69	83
MIX1000	450	98	30	36	8.7	481	6.82	789	486	861	721

[illegible]

<i>Peridinium</i>	673.6	29.1	21.8	31.5	63.1	75.2	38.8	87.3	70.4	29.1	67.9	24.3	21.8	43.7	31.5	48.5	82.5	43.7	+
<i>Bacillariophyta</i>																			
Pennate	1888	6158.7	5544.5	5151.1	6057.6	5124.8	6103.7	5482.6	5492.3	7224.5	6409.3	7998.3	5606.3	5094.5	4114.4	6487.0	5375.9	4276.9	6550.0
Centric	+	294.4	129.3	107.7	337.5	398.5	226.2	211.8	244.1	122.1	161.6	+		111.3	107.7	+	125.7		93.4
Colony or filament forming	36.3	60.6	50.9	63.1	58.2	46.1	67.9	72.8	21.8	29.1	99.5	152.8	101.9	87.3	63.1	94.6	106.7	58.2	21.8
Unidentified																			
Single celled	2735																		
Colonial			+	+	+	+				+		+							
Total number of taxa	33	32	34	31	32	30	30	26	29	28	30	28	23	28	25	29	31	24	27

Table S3. Concentrations of NO₃+NO₂-N, total phosphorus (TP), dissolved reactive phosphorus (DRP) chlorophyll-*a*, and dissolved oxygen (DO), conductivity, pH, as well as concentrations of biocides carbendazim (CD), diuron (DR), terbutryn (TB) and irgarol (IRG), measured at the beginning (day 0, water sample collected from the pond) and at the end (day 10) of the sediment microcosm experiment. NA – not analyzed or not available.

Sample ID	Water Quality Parameters							Biocide Concentrations, ng L ⁻¹			
	NO ₃ +NO ₂ -N, µg L ⁻¹	TP, µg L ⁻¹	DRP, µg L ⁻¹	Chlorophyll- <i>a</i> , µg L ⁻¹	DO, mg L ⁻¹	Conductivity, µS cm ⁻¹	pH	CD	IRG	TB	DR
Day0	267(±0.025)	124(±3.42)	7(±0.85)	NA	11.01(±0.05)	500(±0.82)	7(±0.17)	7.2(±1.5)	<LOD	7(±0.5)	<LOD
Control1	40	105	32	NA	8.47	517	7.23	12	<LOD	8.4	<LOD
Control2	50	33	2	NA	8.4	569	7.5	8.7	<LOD	8.7	<LOD
Control3	20	84	38	NA	8.72	553	7.83	13	<LOD	8.5	<LOD
CD10	60	24	3	NA	8.55	524	7.56	11.2	<LOD	6.3	<LOD
CD100	50	19	3	NA	8.24	537	7.54	67	<LOD	<LOD	<LOD
CD1000	50	58	4	NA	8.57	526	7.67	639	<LOD	<LOD	<LOD
IRG10	50	27	2	NA	8.11	550	7.38	<LOD	<LOD	7.4	<LOD
IRG100	40	32	3	NA	8.56	530	7.59	<LOD	<LOD	<LOD	<LOD
IRG1000	40	36	4	NA	8.22	534	7.47	<LOD	106	<LOD	<LOD

<i>Gonium</i>		+	89.8				30.5												
Unidentified single celled			+		114.9	+				+	+		79.0		+			+	
<i>Chlorococcales</i>																			
<i>Desmatractum</i>	+				+	+	+		+	+	+	+		+	+	+	+	+	+
<i>Quadricoccus</i>								+											
<i>Treubaria</i>	+	+	+		+	+	+	+	+	+		+			+	+	+	+	
<i>Chlorelalles</i>																			
<i>Actinastrum</i>		+					+			+	+	+				+	+	+	+
<i>Chlorella</i>	+	17,552.0	+	+	+	+	46,528.4	+	18,279.0	39,004.6	31,203.6	+	+	+	19,109.9	+	+	19,502.3	+
<i>Crucigeniella</i>								+			+		+						
<i>Dictyosphaerium</i>	+	+	+	+	+	+	+	+		+	+	+				+	+	+	+
<i>Didymocystis</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Lagerheimia</i>	+	82.6	+	+	+	+	+	+	+	86.2	32.3	43.1	+		+	34.1	136.4	86.2	+
<i>Nephrocytium</i>																+		+	
<i>Oocystis</i>				+														+	
<i>Ulotrichales</i>																			
<i>Elakatothrix</i>	+	+																	
<i>Koliella</i>	267	4007.7	184.4	123.7	58.2	60.6	201.4	177.1	959.5	968.0	594.4	232.9	+		52.2	496.7	651.0	1307.6	291.5
<i>Zygnematales</i>	6.8																		
<i>Closterium</i>		7.0							0.4								+	2.0	
<i>Cosmarium</i>						+													
<i>Cyanophyta (Cyanobacteria, blue-green algae)</i>																			
<i>Chroococcales</i>																			
<i>Aphanocapsa</i>		+									+								
<i>Chroococcus</i>																		+	
<i>Microcystis</i>																		+	
<i>Snowella</i>		+																	
<i>Snowella/Woronichinia</i>										+	+							+	
Coccoidal <i>chroococcales</i>	21,319	20,477.4	+	+	+	+	+	+	+	+	21,452.5	+	+	+		+	14,955.6	16,576.9	+
Rod shaped <i>chroococcales</i>	+		+	+	+		+					+		+	+				+

Unidentified colonial		+		+			+		+	+						+	+	+	
<i>Nostocales</i>																			
<i>Anabaena</i>	+	+											+			+	+	+	
<i>Oscillatoriales</i>																			
<i>Pseudanabaena</i>	150.8	4121.8	251.3	283.6	+	+	1545.7	+	+	136.4	154.4	179.5		+	12.6	879.6	362.6	4222.3	
Unidentified	65.5	203.8	+		+		+			+	+	41.2	+	19.4	+	66.7	+	+	+
<i>Euglenophyta</i>																			
<i>Euglena</i>	1.6	0.4		2.4	2.0	2.4	0.8				0.2				0.8				
<i>Lepocinclis</i>				+															
<i>Phacus</i>		+		+		0.4											+		
<i>Trachelomonas</i>		17.0		21.8								+			0.4		+	+	
<i>Strombomonas</i>	7.6	29.1		+	+	0.4								+		0.2	+		
Unidentified				+	+	+	+	0.8	0.8			4.0	0.4	0.8	+	1.8	6.0	5.6	2.8
<i>Chrysophyta</i>																			
<i>Dinobryon</i>	+																		
<i>Cryptophyta</i>	400	254.9	71.8	+	104.1	75.4	82.6	215.4	337.5	+	68.2	155.6	32.3	18.0	129.7	89.0	53.9	82.6	+
<i>Xanthophyta</i>																			
<i>Centritractus</i>		+	55.8		+	+	+	+	+	+	+	+		+	+	+	+	+	+
<i>Goniochloris</i>		+	+	+	+	+	+			+	+	+		+	+	+	+	+	+
<i>Dinophyta</i>																			
<i>Peridinium</i>	552	+		+	6.0	0.6	1.2	34.0	19.4	+	+	1.6		17.0	+	+			0.8
<i>Bacillariophyta</i>																			
Pennate	3272.5	3170.7	507.0	665.3	715.3	167.0	395.8	312.5	359.0	221.2	700.1	590.5	258.6	121.3	194.6	981.1	527.2	454.6	2377.4
Centric	+	114.9	50.3	104.1	+	+	+	32.3	+	+	19.7	147.2				+	+	125.7	341.1
Colony or filament forming	89.8										+					+	+		
Unidentified																			
Single celled	262.1																		
Total number of taxa	30	35	23	29	26	30	28	23	22	26	28	29	17	21	22	30	31	34	23

Table S5. NO₃+NO₂-N, total phosphorus (TP), dissolved reactive phosphorus (DRP), chlorophyll-*a*, dissolved oxygen (DO), conductivity (Cond), pH, water temperature (T), as well as biocide carbendazim (CD), diuron (DR), terbutryn (TB) and irgarol (IRG) concentrations, measured for the outdoor mesocosm experiment. NA – not analyzed or not available.

Sample ID	Sampling Day	Water Quality Parameters, µg L ⁻¹				Field Measurements				Biocide Concentrations, ng L ⁻¹			
		NO ₃ +NO ₂ -N	TP	DRP	Chlorophyll- <i>a</i>	DO, mg L ⁻¹	Cond, µS cm ⁻¹	pH	T, °C	CD	IRG	TB	DR
Pond1	Day 0	60	168	11	94.1	13.7	188	7.7	19.4	24	<LOD	31	<LOD
	Day 3	NA	NA	NA	NA	12.1	211	7	19	21	6	30	<LOD
	Day 6	NA	NA	NA	NA	7.8	235	6.9	18	15	<LOD	34	<LOD
	Day 9	290	224	3	103.3	9.3	165	6.7	19.6	30	<LOD	34	<LOD
	Day 12	NA	NA	NA	NA	11.6	162	7	19.4	21	<LOD	36	<LOD
	Day 15	40	132	1	-	11	186	6.9	19.2	32	<LOD	27	<LOD
Pond2	Day 0	70	190	8	153.1	12.7	185	8.5	19.1	26	<LOD	35	<LOD
	Day 3	NA	NA	NA	NA	11.2	210	7.7	19.2	23	<LOD	24	<LOD
	Day 6	NA	NA	NA	NA	8.2	236	7	17.7	15	<LOD	36	<LOD
	Day 9	170	185	3	113.7	8	159	7	19.9	26	<LOD	28	<LOD
	Day 12	NA	NA	NA	NA	10.5	162	7.3	19.6	23	<LOD	33	<LOD
	Day 15	40	105	3	79.2	9.2	188	7.2	18.5	37	<LOD	28	<LOD
Control1	Day 0	50	312	14	107	11.6	203	8.5	19.6	224	<LOD	38	<LOD
	Day 3	NA	NA	NA	NA	8.1	213	7.8	19	378	<LOD	32	<LOD
	Day 6	NA	NA	NA	NA	5	234	7.5	18.4	NA	NA	NA	NA
	Day 9	50	155	31	96.3	5.2	248	7.4	18.9	548	<LOD	16	<LOD
	Day 12	NA	NA	NA	NA	6.8	255	7.6	18.7	759	<LOD	20	<LOD
	Day 15	40	82	1	41.2	6.2	265	7.5	18.2	NA	NA	NA	NA
Control2	Day 0	60	177	13	78.4	11.3	190	8.1	19.4	49	<LOD	43	<LOD
	Day 3	NA	NA	NA	NA	9.1	199	7.8	19.2	67	<LOD	42	<LOD
	Day 6	NA	NA	NA	NA	7	216	7.3	17.6	84	<LOD	45	<LOD
	Day 9	80	113	0	82.8	7.3	223	7.3	19.2	120	<LOD	25	<LOD
	Day 12	NA	NA	NA	NA	8.2	185	7.3	18.8	88	<LOD	39	<LOD
	Day 15	NA	85	4	14.9	6.9	186	7.3	18.3	154	<LOD	25	<LOD
CD100	Day 0	50	145	11	67.7	11.7	190	8.7	19.4	155	<LOD	48	<LOD
	Day 3	NA	NA	NA	NA	7.8	201	7.8	19.4	196	NA	NA	<LOD
	Day 6	NA	NA	NA	NA	5.9	210	7.4	17.6	208	<LOD	32	<LOD
	Day 9	40	109	1	-	4	239	7.6	19	237	<LOD	26	<LOD

	Day 12	NA	NA	NA	NA	5.4	251	7.5	18.9	324	<LOD	29	<LOD
	Day 15	40	96	11	3.8	5.2	258	7.5	18.5	533	<LOD	0	<LOD
CD1000	Day 0	40	147	26	71.7	11.8	188	8.8	19.4	530	<LOD	38	<LOD
	Day 3	NA	NA	NA	NA	8.8	198	8.3	19	562	<LOD	36	<LOD
	Day 6	NA	NA	NA	NA	5.9	230	7.4	17.8	530	<LOD	34	<LOD
	Day 9	40	118	1	27	3.3	245	7.6	19.6	482	<LOD	23	<LOD
	Day 12	NA	NA	NA	NA	4.5	256	7.5	19	663	<LOD	28	<LOD
	Day 15	40	69	8	7.1	5.3	265	7.5	18.5	963	<LOD	31	<LOD
IRG100	Day 0	200	144	11	110.7	11.8	199	8.5	19.5	70	98	51	<LOD
	Day 3	NA	NA	NA	NA	11.4	206	8.5	19	103	41	41	<LOD
	Day 6	NA	NA	NA	NA	8.6	220	7.6	18.2	109	21	43	<LOD
	Day 9	80	213	26	99	8.7	217	7.1	19	102	<LOD	31	<LOD
	Day 12	NA	NA	NA	NA	8.5	166	7.3	19.2	51	<LOD	57	<LOD
	Day 15	40	134	3	29.6	8.2	180	7.4	18.7	93	<LOD	37	<LOD
IRG1000	Day 0	50	149	11	77	11.6	190	8.7	19.6	149	1080	43	<LOD
	Day 3	NA	NA	NA	NA	7	202	7.9	19.3	274	712	37	<LOD
	Day 6	NA	NA	NA	NA	3.3	213	7.4	17.8	284	513	37	<LOD
	Day 9	50	86	1	31.7	2.8	241	7.3	19.2	489	247	33	<LOD
	Day 12	NA	NA	NA	NA	6.7	241	7.5	19.1	539	186	44	<LOD
	Day 15	40	79	3	10.8	6.9	246	7.7	18.6	833	150	52	NA
TB100	Day 0	260	129	8	82.1	11.5	188	8.6	19.4	107	<LOD	153	<LOD
	Day 3	NA	NA	NA	NA	8.3	198	7.8	19.1	162	<LOD	107	<LOD
	Day 6	NA	NA	NA	NA	5.8	214	7.3	17.6	185	<LOD	86	<LOD
	Day 9	60	86	3	-	4.9	223	7.3	19.1	244	<LOD	55	<LOD
	Day 12	NA	NA	NA	NA	7	211	7.3	18.9	229	<LOD	54	<LOD
	Day 15	50	43	11	4.3	6	211	7.4	18.5	322	<LOD	44	<LOD
TB1000	Day 0	40	151	10	78.1	11.7	198	8.8	19.8	84	<LOD	1187	<LOD
	Day 3	NA	NA	NA	NA	6.8	207	7.7	19	87	<LOD	770	<LOD
	Day 6	NA	NA	NA	NA	4.4	234	7.4	18.3	151	<LOD	973	<LOD
	Day 9	40	144	18	25.4	2.8	245	7.2	18.9	181	<LOD	813	<LOD
	Day 12	NA	NA	NA	NA	4.6	257	7.5	19	328	<LOD	870	<LOD
	Day 15	40	69	5	8.2	4.7	270	7.4	18.6	602	<LOD	770	<LOD
	Day 0	40	178	11	91.3	10.3	189	8	19.4	65	<LOD	46	101
	Day 3	NA	NA	NA	NA	6.6	196	7.7	19	73	<LOD	36	85

DR100	Day 6	NA	NA	NA	NA	4.6	215	7.4	18	105	<LOD	37	81
	Day 9	50	119	11	38.1	3.6	225	7.2	18.8	132	<LOD	30	72
	Day 12	NA	NA	NA	NA	3.9	233	7.3	18.3	187	<LOD	36	59
	Day 15	40	113	7	12.4	3.6	244	7.2	17.8	295	<LOD	31	73
DR1000	Day 0	NA	187	11	106.1	11.7	194	8.5	19.4	39	<LOD	20	421
	Day 3	NA	NA	NA	NA	7.5	204	7.8	19	54	<LOD	34	1041
	Day 6	NA	NA	NA	NA	4.8	226	7.5	18.2	87	<LOD	33	999
	Day 9	50	90	26	26.6	3.4	236	7.3	18.9	89	<LOD	27	NA
	Day 12	NA	NA	NA	NA	5.4	244	7.4	18.5	159	<LOD	38	830
	Day 15	40	70	3	26.1	6	253	7.4	17.9	253	<LOD	31	475

Table S6. Average and maximum biocide concentrations (ng L⁻¹), measured in mesocosms during the experiment period.

Biocide Concentrations in Mesocosms, ng L⁻¹								
	CD		IRG		DR		TB	
	Average	Max.	Average	Max.	Average	Max.	Average	Max.
Control1	477	759					27	38
Control2	94	154					37	45
IRG100	88	109	27	98			43	57
IRG1000	428	833	481	1080			41	52
DR100	143	295			79	101	36	46
DR1000	114	253			753	1041	31	38
CD100	276	533					27	48
CD1000	622	963					32	38
TB100	209	322					83	153
TB1000	239	602					897	1187

Table S7. Numbers of organisms (mL⁻¹) per phytoplankton taxa identified at the end (day 15) of the outdoor mesocosm experiment. A + indicates that at least one organism belonging to that taxa was observed.

Taxonomic Classification	Control1	Control2	CD100	CD1000	IRG100	IRG1000	TB100	TB1000	DR100	DR1000
<i>Chlorophyta (Green algae)</i>										
<i>Sphaeropleales</i>										
<i>Ankistrodesmus</i>	+	+	+							
<i>Coelastrum</i>		+				+	+	+	+	+
<i>Crucigenia</i>	+			+		+	+		+	+
<i>Kirchmeriella</i>	+									
<i>Monoraphidium</i>	1061.3	135.9	21.2	41.8	165.0	159.9	17.0	+	89.2	272.9
<i>Pediastrum</i>	2.0	0.8	0.4	1.2	1.6	2.6	0.4	+	+	3.6
<i>Scenedesmus</i>	450.0	52.2	20.6	30.9	43.7	58.2	29.1	18.4	24.9	76.4
<i>Tetraedron</i>	+	+	+	+	+	+	+	+	+	+
<i>Tetrastrum</i>	+	+		+		+	+	+	+	+
Unidentified single celled forms	+	+	+			+		+	+	+
<i>Volvocales</i>										
<i>Gonium</i>					4.8					
Unidentified single celled					+					+
<i>Chlorococcales</i>										
<i>Desmatractum</i>	+									
<i>Chlorelalles</i>										
<i>Actinastrum</i>										
<i>Chlorella</i>	152,515		4388.01	+	+	578,282	+		42,417.5	368,904
<i>Crucigeniella</i>	+	+	+	+	33.2	40.4	+	+	+	70.0
<i>Dictyosphaerium</i>										
<i>Didymocystis</i>	+	+	+	+		+	+	+	+	+
<i>Lagerheimia</i>	+				+	+				

<i>Nephrocytium</i>	+							+		
<i>Oocystis</i>									+	
<i>Ulotrichales</i>										
<i>Elakatothrix</i>										
<i>Koliella</i>	+	+						+		
<i>Zygnematales</i>										
<i>Closterium</i>	0.4	1.2	0.1	0.2	2.4		0.1			
<i>Staurastrum</i>										
Cyanophyta (Cyanobacteria, blue-green algae)										
<i>Chroococcales</i>										
<i>Chroococcus</i>										
<i>Merismopedia</i>		+								
<i>Microcystis</i>										
<i>Snowella</i>		+					+			
<i>Snowella/Woronichinia</i>			+			+				
Coccoidal chroococcales	218,113.3	11,216.7	+	+	33,153.9	15,371.0	+	+	9263.6	39881.5
Rod shaped chroococcales	39,358.8	+		+	+	+		+	+	+
Unidentified colonial										
<i>Nostocales</i>										
<i>Anabaena</i>										
<i>Oscillatoriales</i>										
Unidentified	+	+	+		+	+		+	+	
Euglenophyta										
<i>Euglena</i>	16.0	16.2	1.8	0.8	170.4	16.0	1.4	2.3	0.5	1.8
<i>Lepocinclis</i>	+	+	+	+	+	+	+	+		+
<i>Phacus</i>	2.8	2.2	0.3	0.2	3.2	2.8	0.6	0.1	+	0.6
<i>Trachelomonas</i>	471.6	56.5	53.4	98.5	198.9	101.9	39.4	197.3	121.0	145.6
<i>Strombomonass</i>	2.8	+	+	+	+	2.2	+			
Unidentified	+	+	+	+	86.2	+	+	0.6	+	+

<i>Chrysophyta</i>										
<i>Dinobryon</i>					+					
<i>Cryptophyta</i>	510.6	26.7	23.0	28.5	58.2	75.2	45.5	21.0	72.8	29.9
<i>Xanthophyta</i>										
<i>Centritractus</i>		+							+	
<i>Goniochloris</i>	+	+	+		+		+		+	
<i>Dinophyta</i>										
<i>Peridinium</i>	+									
<i>Bacillariophyta</i>										
Pennate	58.2	346.5	11.5	57.6	162.5	59.4	61.3	22.3	+	29.1
Centric										
Colony or filament forming					+		+			
Total number of taxa	30	27	22	20	24	24	23	19	24	22