

Table S1. Summary of microbial OTUs produced by 16S universal primer set in *C. polykrikoides* bloomed water sample in 2018.

Phylum	A			B			C			D			E			F			H			I			J		
	Merge d reads	Prop .(%)	Numbe r of OTUs	Merge d reads	Prop .(%)	Numbe r of OTUs	Merge d reads	Prop .(%)	Numbe r of OTUs	Merge d reads	Prop .(%)	Numbe r of OTUs	Merge d reads	Prop .(%)	Number of OTUs	Merge d reads	Prop .(%)	Number of OTUs	Merge d reads	Prop .(%)	Numbe r of OTUs	Merge d reads	Prop .(%)	Numbe r of OTUs	Merge d reads	Prop .(%)	Numbe r of OTUs
Actinobacteria	6,849	11.97	10	3,775	14.52	11	3,121	10.63	8	634	1.29	4	1,394	5.51	7	7,798	10.69	9	3,804	3.17	5	3,892	3.00	4	5,062	4.08	6
Bacillariophyta	624	1.09	5	211	0.81	3	88	0.30	1	224	0.45	3	44	0.17	1	0	0.00	0	0	0.00	0	0	0.00	0	520	0.42	2
Bacteroidetes	5,553	9.71	23	1,881	7.24	23	3,475	11.84	27	10,474	21.24	21	2,598	10.28	22	12,652	17.34	26	10,374	8.64	24	18,911	14.58	28	25,034	20.18	33
Chlamydiae	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	140	0.11	1
Chlorophyta	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0
Cryptophyta	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	29	0.11	1	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0
Cyanobacteria	6,740	11.78	13	3,551	13.66	16	7,464	25.42	13	2,636	5.35	8	8,931	35.33	12	21,528	29.50	13	50,436	42.02	9	45,503	35.08	8	23,793	19.18	8
Euryarchaeota	1,051	1.84	6	480	1.85	5	236	0.80	2	4,194	8.51	6	62	0.25	1	272	0.37	1	0	0.00	0	0	0.00	0	0	0.00	0
Foraminifera	1,090	1.91	1	0	0.00	0	183	0.62	1	992	2.01	1	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0
Haptophyta	87	0.15	1	30	0.12	1	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0
Marinimicrobia	324	0.57	1	99	0.38	1	57	0.19	1	0	0.00	0	39	0.15	1	155	0.21	1	325	0.27	1	181	0.14	1	436	0.35	1
Ochrophyta	4,589	8.02	1	6,235	23.99	2	1,567	5.34	1	0	0.00	0	168	0.66	1	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0
Planctomycetes	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	159	0.13	1	530	0.41	1	0	0.00	0
Proteobacteria	30,002	52.45	38	9,565	36.80	38	12,132	41.32	41	30,158	61.16	32	11,586	45.83	45	28,733	39.37	35	54,243	45.19	40	56,499	43.56	47	65,315	52.66	47
Verrucomicrobia	226	0.40	2	102	0.39	2	983	3.35	3	0	0.00	0	399	1.58	2	1,745	2.39	3	680	0.57	2	3,540	2.73	3	3,735	3.01	3
Eukaryote	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	157	0.12	1	0	0.00	0
Unclassified Phylum	66	0.12	1	65	0.25	2	55	0.19	1	0	0.00	0	32	0.13	1	96	0.13	1	0	0.00	0	502	0.39	2	0	0.00	0
Total	57,201	100	102	25,994	100	104	29,361	100	99	49,312	100	75	25,282	100	94	72,979	100	89	120,021	100	82	129,715	100	95	124,035	100	101

Table S2. Summary of microbial OTUs produced by 16S universal primer set in *C. polykrikoides* bloomed water sample in 2019.

Phylum	A			C			D			E			F			G			H			I			J		
	Merge d reads	Prop(%)	Numbe r of OTUs	Merge d reads	Prop(%)	Numbe r of OTUs	Merge d reads	Prop(%)	Numbe r of OTUs	Merge d reads	Prop(%)	Numbe r of OTUs	Merge d reads	Prop(%)	Numbe r of OTUs	Merge d reads	Prop(%)	Numbe r of OTUs	Merge d reads	Prop(%)	Numbe r of OTUs	Merge d reads	Prop(%)	Numbe r of OTUs	Merge d reads	Prop(%)	Numbe r of OTUs
Actinobacteria	7,352	14.67	8	5,458	11.00	6	1,660	4.28	5	2,491	3.60	3	3,353	4.68	6	335	0.53	3	7,524	8.12	9	3,907	5.23	7	5,054	8.03	8
Bacillariophyta	114	0.23	1	79	0.16	1	71	0.18	1	0	0.00	0	291	0.41	1	474	0.75	2	1,697	1.83	2	2,178	2.91	5	435	0.69	4
Bacteroidetes	3,962	7.91	21	1,577	3.18	10	4,920	12.68	32	2,803	4.05	13	1,980	2.76	13	5,430	8.58	9	7,470	8.07	22	6,248	8.36	23	5,509	8.76	23
Chlamydiae	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0
Chlorophyta	56	0.11	1	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0
Cryptophyta	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0
Cyanobacteria	7,008	13.98	13	14,341	28.91	12	6,180	15.93	9	21,084	30.46	11	22,619	31.58	11	25,037	39.56	10	13,184	14.24	8	11,277	15.08	8	3,243	5.16	6
Euryarchaeota	844	1.68	4	176	0.35	2	518	1.34	6	0	0.00	0	0	0.00	0	0	0.00	0	145	0.16	1	507	0.68	2	453	0.72	3
Foraminifera	0	0.00	0	72	0.15	1	138	0.36	1	135	0.20	1	607	0.85	1	111	0.18	1	5,890	6.36	3	438	0.59	2	639	1.02	2
Haptophyta	334	0.67	1	70	0.14	1	73	0.19	1	96	0.14	1	91	0.13	1	0	0.00	0	0	0.00	0	247	0.33	2	0	0.00	0
Marinimicrobia	507	1.01	1	177	0.36	1	150	0.39	1	0	0.00	0	270	0.38	2	167	0.26	2	1,015	1.10	1	480	0.64	2	301	0.48	1
Ochrophyta	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0
Planctomycetes	158	0.32	2	349	0.70	2	0	0.00	0	334	0.48	2	247	0.34	1	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0
Proteobacteria	29,526	58.92	39	26,443	53.31	37	24,908	64.20	43	36,579	52.84	42	40,879	57.08	43	30,987	48.96	39	55,086	59.49	42	48,646	65.06	42	46,296	73.60	46
Verrucomicrobia	0	0.00	0	690	1.39	2	58	0.15	1	5,706	8.24	2	914	1.28	2	0	0.00	0	278	0.30	1	0	0.00	0	809	1.29	4
Eukaryote	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0
Unclassified Phylum	252	0.50	2	168	0.34	1	123	0.32	1	0	0.00	0	367	0.51	1	750	1.19	3	315	0.34	1	839	1.12	1	166	0.26	1
	50,113	100	93	49,600	100	76	38,799	100	101	69,228	100	75	71,618	100	82	63,291	100	69	92,604	100	90	74,767	100	94	62,905	100	98

Table S3. Summary of phytoplankton OTUs produced by p23S universal primmer set in *C. polykrikoides* bloomed water sample in 2018.

Phylum	A			B			C			D			E			F			H			I			J		
	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs
Cyanobacteria	8,279	13.97	9	2,095	4.59	7	26,351	31.32	11	4,163	19.44	11	36,049	59.45	10	22,975	44.79	8	37,305	63.71	12	36,531	70.61	11	48,743	85.12	14
Bacillariophyta	2,106	3.55	10	906	1.98	7	1,387	1.65	5	2,425	11.32	16	576	0.95	3	546	1.06	3	1,483	2.53	7	972	1.88	6	129	0.23	2
Cercozoa	4,837	8.16	1	3,825	8.37	1	11,895	14.14	1	0	0.00	0	6,913	11.40	1	11,573	22.56	1	2,514	4.29	1	2,555	4.94	1	863	1.51	1
Chlorophyta	9,358	15.79	6	2,502	5.48	6	4,086	4.86	3	2,146	10.02	9	2,630	4.34	4	1,916	3.73	3	11,164	19.07	7	5,320	10.28	6	492	0.86	3
Cryptophyta	1,751	2.95	5	1,111	2.43	6	513	0.61	2	1,551	7.24	3	184	0.30	2	618	1.20	2	1,203	2.05	3	524	1.01	4	0	0.00	0
Euglenophyta	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0
Haptophyta	4,008	6.76	13	1,424	3.12	9	3,409	4.05	12	8,886	41.49	37	3,868	6.38	18	1,208	2.35	10	2,285	3.90	11	3,977	7.69	19	3,552	6.20	18
Miozoa	1,164	1.96	3	200	0.44	2	89	0.11	1	1,295	6.05	6	536	0.88	3	0	0.00	0	1,635	2.79	3	163	0.32	2	88	0.15	1
Ochromphyta	27,515	46.42	6	33,580	73.49	4	36,395	43.26	6	283	1.32	2	9,879	16.29	11	12,464	24.30	6	968	1.65	7	1,525	2.95	10	3,307	5.78	9
Unknown	256	0.43	2	49	0.11	1	0	0.00	0	668	3.12	5	0	0.00	0	0	0.00	0	0	0.00	0	170	0.33	2	89	0.16	1
Total	59,274	100	55	45,692	100	43	84,125	100	41	21,417	100	89	60,635	100	52	51,300	100	33	58,557	100	51	51,737	100	61	57,263	100	49

Table S4. Summary of phytoplankton OTUs produced by p23S universal primmer set in *C. polykrikoides* bloomed water sample in 201

Phylum	A			C			D			E			F			G			H			I			J		
	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs	Merged reads	Prop. (%)	Number of OTUs
Cyanobacteria	4896	12.13	7	14325	49.57	11	11,469	30.14	10	16676	67.68	10	12498	36.90	7	17182	70.57	17	4935	12.49	3	6999	29.31	7	5778	19.35	5
Bacillariophyta	909	2.25	5	550	1.90	2	133	0.35	2	201	0.82	2	271	0.80	2	259	1.06	4	5145	13.02	8	2303	9.64	14	1355	4.54	13
Cercozoa	5785	14.33	1	3840	13.29	1	0	0.00	0	2283	9.27	1	5541	16.36	1	46	0.19	1	15475	39.16	1	1548	6.48	1	210	0.70	1
Chlorophyta	12825	31.76	7	4646	16.08	8	9334	24.53	9	1663	6.75	6	4508	13.31	5	492	2.02	3	5951	15.06	5	4286	17.95	5	14247	47.71	4
Cryptophyta	755	1.87	4	530	1.83	4	1975	5.19	3	390	1.58	3	4956	14.63	1	445	1.83	2	3313	8.38	1	696	2.91	3	1913	6.41	2
Euglenophyta	0	0.00	0	50	0.17	1	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0.00	0	35	0.12	1
Haptophyta	14253	35.30	18	3981	13.78	19	13607	35.76	31	2808	11.40	17	5679	16.77	24	5548	22.79	23	3992	10.10	14	7520	31.49	27	5213	17.46	23
Miozoa	0	0.00	0	0	0.00	0	280	0.74	2	0	0.00	0	112	0.33	1	174	0.71	1	0	0.00	0	151	0.63	1	428	1.43	6
Ochrophyta	254	0.63	3	837	2.90	8	730	1.92	2	484	1.96	6	202	0.60	3	0	0.00	0	665	1.68	5	84	0.35	2	348	1.17	4
Unknown	698	1.73	3	137	0.47	2	526	1.38	4	133	0.54	2	102	0.30	2	203	0.83	3	42	0.11	1	291	1.22	7	334	1.12	2
Total	40375	100	48	28896	100	56	38054	100	63	24638	100	47	33869	100	46	24349	100	54	39518	100	38	23878	100	67	29861	100	61