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Electronic Supporting Information (ESI)

Table ESI-1. List of sampled lakes, their main hydrochemical parameters, cell number and total phytoplankton biomass. The same lakes are labeled by \$, # and § symbols. * sign signifies concentration in mg/L, all other components are in µg/L. All samples collected during open water period were O₂-saturated (100±10%). The third column represents the numbers of lakes used in Manasyrov et al. (2015) study.

Period	No	On map	S, m ²	DOC*	DIC*	pH	Cl*	SO ₄ *	Na	Mg	Al	Si	K	Ca	Fe	Mn
June	J-1	Z-56	5672 [§]	14.1	0.43	4.20	0.178	0.10	211	23	51	103	80	47	160	2.3
June	J-2	Z-62	1766250	13	0.477	4.20	0.244	0.84	2655	89	40	135	337	265	57.8	1.3
June	J-3	Z-81	31400 [#]	15.8	0.323	4.00	0.304	0.16	629	114	49	40	91	181	85	9.8
June	J-4	Z-83	1766250 [§]	6.5	0.858	4.60	0.117	0.21	1120	426	23	244	179	528	256	24.6
June	J-5	Z-85	70650	5.5	0.433	4.60	0.067	0.47	2071	55	21	73	98	224	40	0.1
June	J-6	Z-87	1256	11.6	0.338	4.50	0.060	0.49	1695	99	16	95	117	386	29	1.3
August	A-1	Zf-27	2375	9.3	0.865	5.88	0.031	2.02	2708	516	18	153	110	586	47	0.4
August	A-2	Zf-28	3524	15.3	1.25	6.10	0.197	0.18	1577	900	33	252	93	692	385	11.2
August	A-3	Zf-29	1520	22.8	0.465	5.54	0.766	0.25	2506	110	172	960	713	292	453	15.6
August	A-4	Zf-30	31400 [#]	38.2	0.36	5.59	0.608	4.80	3370	166	123	790	763	438	660	29.5
August	A-5	Zf-31	5024 [§]	10.6	0.357	5.66	0.055	0.86	1253	229	18	147	71	154	35	5.3
August	A-6	LA-1	362984	8.36	0.368	5.20	0.11	0.41	291	256	43	254	140	646	153	20
August	A-7	LA-5	1396951 [§]	12.5	0.47	4.66	0.19	0.89	137	85	68	277	77	389	59	16
August	A-8	LA-10	707	32.9	0.554	3.84	0.13	0.17	53	301	99	285	78	621	153	26
October	O-1	OZ-13	196250	24.3	0.574	4.77	0.165	0.60	809	133	174	208	473	242	242	10.8
October	O-2	OZ-15	41527	26.3	0.65	4.84	0.224	0.25	1287	82	176	360	468	239	269	6.6
October	O-3	OZ-16	567163	13.7	0.58	4.87	0.194	0.31	454	131	220	556	241	226	199	15.2
October	O-4	OZ-17	502400	15.3	0.507	5.01	0.284	0.32	7034	265	312	454	2162	728	230	17.0

October	O-5	OZ-18	1326650 ^{\$}	13.7	0.495	4.69	0.193	0.71	643	214	312	1061	389	506	337	38.3
October	O-6	OZ-19	9499	29.6	0.602	4.10	0.074	0.25	1916	374	116	546	705	476	164	29.9

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9 Table ESM-1, continued. Total cell number, biomass, and cell number of different phytoplankton taxa.

No	N, x1000 cell/mL	Biomass, mg _{wet} /L	Cyanobacteria	Euglenozoa	Cryptophyta	Dinophyta	Ochrophyta	Bacillariophyta	Chlorophyta	Charophyta	Rhodophyta	Flagellata
J-1	5004	1.669	800000		480000	176000	2288000	656000	364000			240000
J-2	5968	0.438	5000000		80000	16000	688000	128000	56000			
J-3	1008	0.649			120000	112000	688000			8000		80000
J-4	1202	0.285	100000	2000	88000	26000	808000	8000	170000			
J-5	6900	12.663	1128000			8000	16000	482000	3550000	36000	1200000	480000
J-6	4618	2.858	2904000		56000			32000	824000	162000		640000
A-1	808	1.364	400000		36000	20000		48000	14000	290000		
A-2	83116	37.201	76784000	40000	32000	24000	8000	620000	2944000	2664000		
A-3	2606	6.808	1312000		16000			88000	56000	974000		160000
A-4	35844	4.990			80000			6092000	29504000	8000		160000
A-5	13272	13.302	11080000	8000	56000	422000	512000	152000	80000	802000		160000
A-6	1626	0.458	808000		268000			4000	232000	34000		280000
A-7	9046	4.820	7200000		264000		160000	48000	408000	806000		160000
A-8#	19	0.261							17000	2000		
O-1	58	0.076			36000			16000	6000			
O-2	36	0.057			32000				4000			
O-3	82	0.320			8000		36000	4000	18000	16000		
O-4	212	0.013	100000		32000							80000
O-5	352	0.644			16000		44000		8000	204000		80000
O-6	5292	0.558	1600000		1440000	32000	160000		460000			1600000

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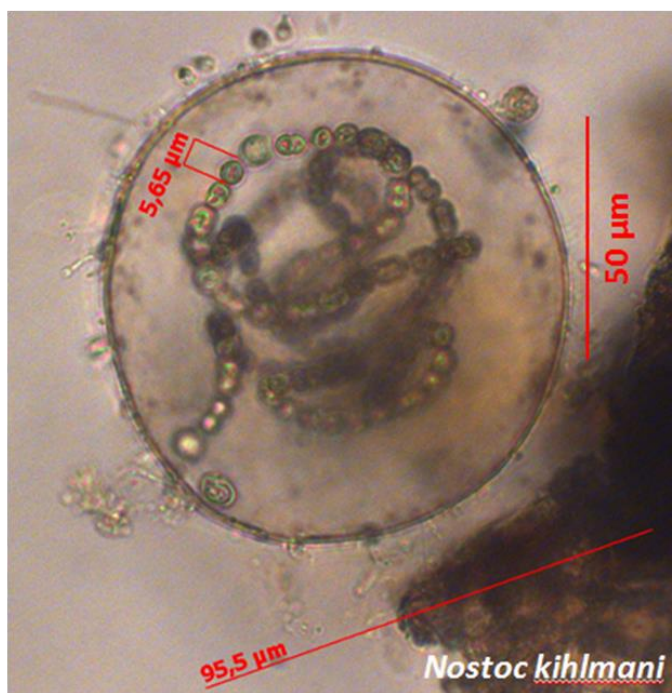
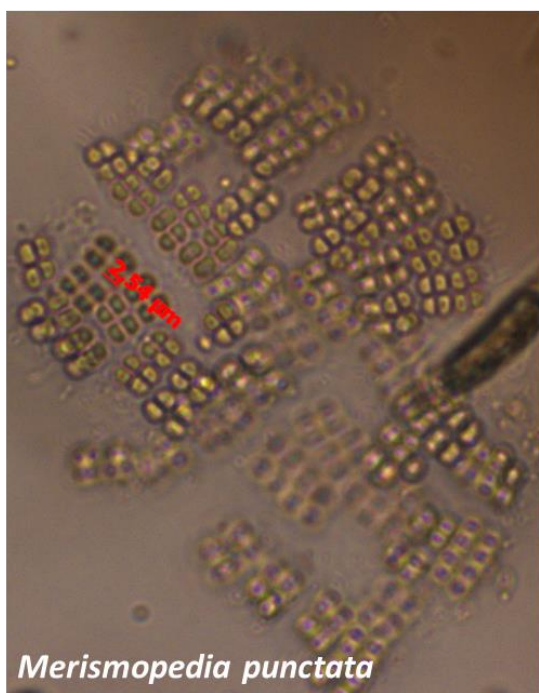
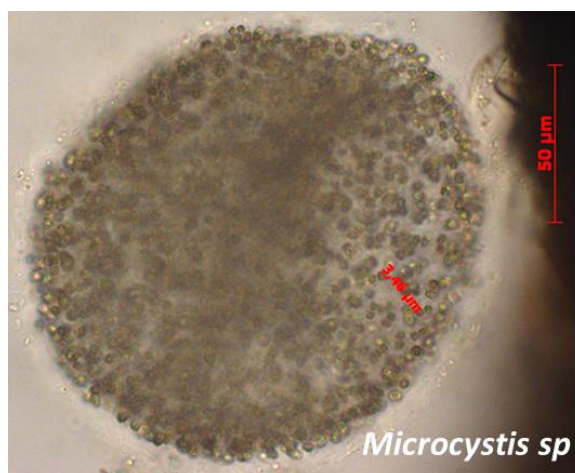
11 # Anomalously high concentration of zooplankton

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Table ESM-2. Phytoplankton, benthic and phytoplankton+benthic species of western Siberia thaw ponds encountered in this study. The origin of species is based on [Barinova S.S., Medvedeva L.A. and Anisimova O.V., 2006. Biodiversity of algae as indicators of environment. Tel-Aviv, 356 pp.]

Phytoplankton species	Benthic species
<i>Anabaena flos-aquae</i> Born. et Flah.	<i>Batrachospermum</i> sp.
<i>Aphanocapsa delicatissima</i> W. et G.S. West	<i>Cosmarium margaritifera</i> Menegh. <i>Cosmarium moniliforme</i> (Turp.) Ralfs
<i>Aphanothece clathrata</i> W. et G.S. West	<i>Micrasterias papillifera</i> Bréb. <i>Micrasterias radiata</i> Hass. <i>Micrasterias sol</i> Kütz.
<i>Asterionella formosa</i> Hass.	<i>Navicula</i> spp.
<i>Aulacoseira subarctica</i> (O. Müll.) Haworth	<i>Nostoc commune</i> Vauch. ex Born et Flah.
<i>Bambusina brebisonii</i> Kütz.	<i>Oedogonium</i> spp.
<i>Ceratium cornutum</i> (Ehrb.) Clapar. et Lachm.	<i>Penium polymorphum</i> (Perty) Perty
<i>Chlamydomonas</i> spp.	<i>Pinnularia</i> spp.
<i>Chroomonas acuta</i> Uterm.	<i>Ulothrix</i> spp.
<i>Closterium aciculare</i> T. West <i>Closterium lineatum</i> Ralfs <i>Closterium pronum</i> Bréb. <i>Closterium setaceum</i> Ehrb. ex Ralfs	<i>Zygnema</i> spp.
<i>Cosmarium obtusatum</i> (Schmidle) Schmidle	
<i>Dictyosphaerium anomalum</i> Korsch.	
<i>Dinobryon divergens</i> Imhof	
<i>Euastrum dubium</i> Näg.	
<i>Hyalotheca undulata</i> West	
<i>Spondylosium planum</i> (Wolle) W. et G.S. West	
<i>Staurastrum arctiscon</i> (Ehrb.) Lund. <i>Staurastrum gracile</i> Ralfs <i>Staurastrum paradoxum</i> Meyen	
<i>Staurodesmus convergens</i> (Ehrb.) Teiling	
<i>Woronichinia compacta</i> (Lemm.) Kom. et Hind.	
<i>Xanthidium antilopaeum</i> Kütz.	
Phytoplankton-Benthic species	
<i>Aphanocapsa incerta</i> (Lemm.) Cronb. et Kom., <i>Botryococcus braunii</i> Kütz., <i>Closterium ulna</i> Focke, <i>Cosmarium bioculatum</i> Bréb., <i>Cosmarium subcostatum</i> Nordst., <i>Desmidium swartzii</i> Ag., <i>Euastrum ansatum</i> Ehrb. ex Ralfs, <i>Fragilaria</i> spp., <i>Closterium parvulum</i> Näg., <i>Merismopedia punctata</i> Meyen, <i>Merismopedia tenuissima</i> Lemm., <i>Oscillatoria tenuis</i> Ag. ex Gom., <i>Pleurotaenium trabecula</i> (Ehrb.) Näg., <i>Peridinium cinctum</i> (Müll.) Ehrb., <i>Staurodesmus</i> spp., <i>Tabellaria flocculosa</i> (Roth) Kütz., <i>Tetraedron minimum</i> (A. Br.) Hansg. <i>Ulothrix zonata</i> (Weber et Mohr) Kütz.	

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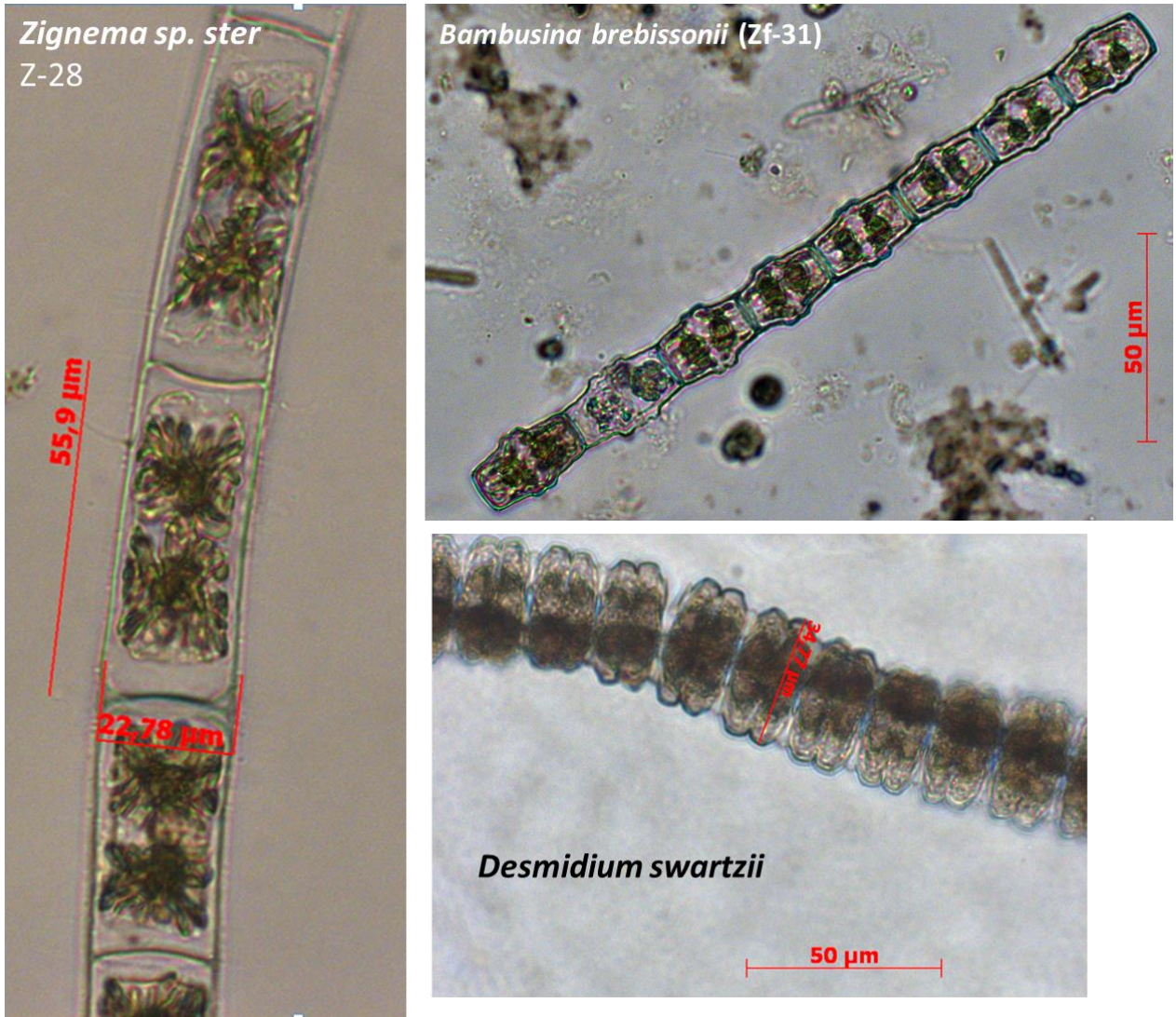
25 **Fig. ESM-1.** Photos of colony-forming cyanobacteria

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33 **Fig. ESM-2.** Photos of colony-forming Charophyta and green algae from thermokarst lakes.

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