

1 Supplementary Tables

2 Supplementary Table 1: Prokaryotic and eukaryotic inhabitants of particles larger and smaller 100 µm identified exclusively within or outside BSBW.

Target gene	Particle size	BSBW	ASV	stat	p-value	Taxonomy	Confidence taxonomic assignment	Function / lifestyle	Ref.
16S rRNA	>100 µm	-	-	-	-	-	-		
	<100 µm	outside BSBW	>ASV_334	0.838	0.0324 *	Alphaproteobacteria SAR11 Clade II	-	ubiquitous, carbon-oxidizing	72
			>ASV_650	0.834	0.0464 *	Woesearchaia	-	heterotrophic, anaerobic syntrophic	73,74
			>ASV_236	0.831	0.0231 *	Alphaproteobacteria SAR11 Clade II	-	ubiquitous, carbon-oxidizing	72
			>ASV_278	0.796	0.0244 *	Phycisphaeraeaceae FS140-16B-02	-	aerobic and facultatively anaerobic	75
	inside BSBW	>ASV_458	0.854	0.0046 **	Nitrosococcaceae FS142-36B-02	-	ammonium oxidizing	76	
		>ASV_296	0.753	0.0330 *	Chloroflexi JG30-KF-CM66	-	unknown diversity of metabolic pathways	77	
	18S rRNA	>100 µm	-	-	-	-	-	-	
<100 µm		inside BSBW	>ASV_685	0.885	0.0173 *	Syndiniales Dino-Group-II-Clade-10-and-11	0.89	mixotroph / heterotroph	78
			>ASV_836	0.879	0.0333 *	Dolichomastigaceae -B	0.96	deep sea sediments	34
			>ASV_316	0.856	0.0348 *	Strombidium_R	0.88	heterotroph	79
			>ASV_487	0.849	0.0490 *	Dino-Group-II-Clade-4 Amoebophrya	1.00	parasitic	80
			>ASV_609	0.848	0.0168 *	Hacrobia Haptophyta	0.71	autotroph	79
			>ASV_539	0.847	0.0229 *	Picozoa_XXX Picomonas	0.95	heterotroph	81
			>ASV_209	0.845	0.0406 *	Radiolaria RAD-B-Group-II	1.00	heterotroph	82
			>ASV_369	0.839	0.0391 *	Dinoflagellata Dinophyceae	1.00	heterotroph/mixotroph	83
			>ASV_256	0.831	0.0386 *	Syndiniales Dino-Group-II	0.97	heterotroph/mixotroph	83
			>ASV_583	0.822	0.0442 *	Chytriodiniaceae Dissodinium	0.97	parasitic	84
			>ASV_690	0.812	0.0472 *	Opalozoa MAST-3	0.92	heterotroph	85
			>ASV_461	0.771	0.0464 *	Syndiniales Dino-Group-IV-Hematodinium-Group Hematodinium	0.76	parasitic	86
			>ASV_263	0.747	0.0443 *	Syndiniales Dino-Group-II-Clade-6	0.98	heterotroph/mixotroph	83

4 **Supplementary Table 2: Number of 16S sequences after each filtering step.** SD and LD

5 represent particulate sample material smaller and larger than 100 μm ESD, respectively.

ID	input	filtered	denoisedF	denoisedR	merged	nonchim
LD1-16S_S25	65353	27173	26457	25864	14333	14333
LD10-16S_S34	86676	32202	31679	31402	8652	8650
LD11-16S_S35	106298	33439	32643	32432	11347	11346
LD12-16S_S36	153312	66331	65594	65197	45810	45744
LD13-16S_S37	101536	37887	37403	37136	34586	34540
LD14-16S_S38	170410	70462	69286	68881	31954	31954
LD15-16S_S39	106127	45922	45282	44948	34724	34698
LD16-16S_S40	108561	40646	40160	39895	31104	31104
LD17-16S_S41	187003	89610	88493	87945	75415	73940
LD18-16S_S42	179030	71533	70202	69917	38770	38769
LD19-16S_S43	155283	70978	70174	69729	53179	53040
LD2-16S_S26	100467	45680	44874	44562	25624	25624
LD20-16S_S44	249648	99500	98391	98015	65252	64899
LD21-16S_S45	119263	43791	43171	42955	25611	25600
LD23-16S_S46	91318	37337	36727	36437	33205	33169
LD24-16S_S47	112029	44574	43630	43271	27299	27282
LD3-16S_S27	47960	9212	8502	7772	4446	4408
LD4-16S_S28	98684	34503	33770	33283	6059	6059
LD5-16S_S29	12475	640	557	448	447	447
LD6-16S_S30	111810	32910	32219	31723	1820	1820
LD7-16S_S31	71068	22017	21503	21211	391	391
LD8-16S_S32	81187	24318	23601	23383	4195	4195
LD9-16S_S33	95130	33513	32896	32535	7044	7040
negative-control-16S_S48	737	70	34	30	24	24
SD1-16S_S1	108501	57544	56953	56734	45876	45725
SD10-16S_S10	78407	34302	32335	31998	23039	23039
SD11-16S_S11	97188	41474	39856	39302	31302	31302
SD12-16S_S12	82192	39622	37842	37497	29747	29747
SD13-16S_S13	72801	34970	34058	33699	27906	27906
SD14-16S_S14	110743	51439	49665	49364	41147	41147
SD15-16S_S15	78133	39093	37032	36614	29460	29444
SD16-16S_S16	49583	23939	23082	22685	18937	18937
SD17-16S_S17	147304	68592	66646	66360	55210	55208
SD19-16S_S18	174226	83761	81797	81152	68728	68536
SD2-16S_S2	228933	101665	97804	97246	75079	72548
SD20-16S_S19	187276	89208	88025	87230	77002	76854
SD21-16S_S20	284038	141074	139562	139147	119357	119052
SD22-16S_S21	224585	95978	93158	92230	73622	73534
SD23-16S_S22	164683	67787	65315	64747	54160	54160
SD25-16S_S23	94689	45134	43741	43292	35548	35548
SD26-16S_S24	134819	58559	56973	56391	46740	46724
SD3-16S_S3	215023	96153	93443	93022	76846	76462
SD4-16S_S4	3684	1050	945	816	623	623
SD5-16S_S5	204493	92359	89564	89078	72073	71783
SD6-16S_S6	167490	64454	61125	60607	44392	43321
SD7-16S_S7	118053	53961	51629	51104	38736	38541
SD8-16S_S8	38798	16708	15663	15219	10845	10845
SD9-16S_S9	249348	122188	119022	118434	98440	98367

7 **Supplementary Table 3: Number of 18S sequences after each filtering step. SD and LD**

8 represent particulate sample material smaller and larger than 100 μm ESD, respectively.

ID	input	filtered	denoisedF	denoisedR	merged	nonchim
LD1-18S_S73	217285	79958	79345	78898	74867	73305
LD10-18S_S82	190291	84438	84079	84045	77422	73333
LD11-18S_S83	326523	153914	153614	153350	149969	139652
LD12-18S_S84	449410	184737	184325	184185	179627	172775
LD13-18S_S85	202541	57620	57109	57239	53395	51189
LD14-18S_S86	452695	198752	198278	198072	192529	186508
LD15-18S_S87	281194	119732	119403	119154	114476	110867
LD16-18S_S88	249013	109975	109783	109695	107991	104546
LD17-18S_S89	382911	172114	171441	170938	150976	147273
LD18-18S_S90	307678	141737	141235	140966	135622	129748
LD19-18S_S91	480784	222721	222010	221318	214058	200017
LD2-18S_S74	237990	81858	81157	80936	75918	73966
LD20-18S_S92	351315	165155	164855	164192	162229	157652
LD21-18S_S93	368171	162901	162617	162460	156336	148297
LD23-18S_S94	307860	116670	116452	116089	109666	106573
LD24-18S_S95	196434	90724	90425	90255	86966	82752
LD3-18S_S75	129704	53653	53424	53266	52837	52807
LD4-18S_S76	395381	178736	178270	177935	173866	162442
LD5-18S_S77	161326	63638	63411	63257	53624	53197
LD6-18S_S78	448122	182270	181868	181847	170320	167886
LD7-18S_S79	199535	81540	81340	81213	80100	78077
LD8-18S_S80	133674	38413	38236	38122	37323	36015
LD9-18S_S81	158386	70122	69958	69857	64853	64594
negative-control-18S_S96	3911	196	149	144	120	120
SD1-18S_S49	126440	51184	50821	50673	49599	49459
SD10-18S_S58	62172	25523	24920	24657	21661	21532
SD11-18S_S59	168556	72028	71292	70882	63096	62547
SD12-18S_S60	170219	71679	71049	70874	67021	66497
SD13-18S_S61	70478	29110	28698	28566	25953	25718
SD14-18S_S62	366202	136863	135598	135263	124199	122522
SD15-18S_S63	88712	39206	38704	38510	36799	36599
SD16-18S_S64	68986	27818	27406	27156	24784	24713
SD17-18S_S65	56692	21655	21148	21029	19198	18889
SD19-18S_S66	310248	121012	120154	119489	113685	112848
SD2-18S_S50	514033	208535	206707	205970	189694	187967
SD20-18S_S67	283208	115822	115342	114962	111898	111159
SD21-18S_S68	525497	229765	229277	228895	220107	210808
SD22-18S_S69	391702	161481	160335	159691	154219	152617
SD23-18S_S70	138379	49949	49098	48872	43078	42843
SD25-18S_S71	183318	77129	76476	76175	70517	69619
SD26-18S_S72	239728	96065	95305	95058	88660	87727
SD3-18S_S51	526785	219071	217452	216895	204816	202701
SD4-18S_S52	14574	572	473	416	274	274
SD5-18S_S53	756030	301070	298938	297731	282507	278646
SD6-18S_S54	307445	109214	107982	107516	95314	94659
SD7-18S_S55	301998	130519	129092	128430	119902	117973
SD8-18S_S56	174870	72520	71456	70885	65482	64622
SD9-18S_S57	44927	17781	17253	17229	15761	15761

10 **Supplementary References**

- 11 72. Giovannoni, S. J. SAR11 Bacteria: The Most Abundant Plankton in the Oceans. *Ann Rev*
12 *Mar Sci* **9**, 231–255; 10.1146/annurev-marine-010814-015934 (2017).
- 13 73. Gründger, F. *et al.* Methane-fuelled biofilms predominantly composed of methanotrophic
14 ANME-1 in Arctic gas hydrate-related sediments. *Sci Rep* **9**; 10.1038/s41598-019-46209-5
15 (2019).
- 16 74. Liu, X. *et al.* Insights into the ecology, evolution, and metabolism of the widespread
17 Woese archaeotal lineages. *Microbiome* **6**, 102; 10.1186/s40168-018-0488-2 (2018).
- 18 75. Fukunaga, Y. Phycisphaeraceae. In *Bergey's Manual of Systematics of Archaea and*
19 *Bacteria*, edited by W. B. Whitman, *et al.* (Wiley 2015), Vol. 4, pp. 1–3.
- 20 76. Taylor, H. B. & Kurtz, H. D. Composition, diversity, and activity of aerobic ammonia-
21 oxidizing Bacteria and Archaea in the intertidal sands of a grand strand South Carolina
22 beach. *Microbiologyopen* **9**, e1011; 10.1002/mbo3.1011 (2020).
- 23 77. Mehrshad, M. *et al.* Hidden in plain sight—highly abundant and diverse planktonic
24 freshwater Chloroflexi. *Microbiome* **6**; 10.1186/s40168-018-0563-8 (2018).
- 25 78. Rachik, S. *et al.* Diversity and potential activity patterns of planktonic eukaryotic microbes
26 in a mesoeutrophic coastal area (eastern English Channel). *PloS one* **13**, e0196987;
27 10.1371/journal.pone.0196987 (2018).
- 28 79. Montagnes, D. J. Growth responses of planktonic ciliates in the genera *Strobilidium* and
29 *Strombidium*. *Mar. Ecol. Prog. Ser.* **130**, 241–254; 10.3354/meps130241 (1996).
- 30 80. Kim, S. *et al.* Genetic diversity of parasitic dinoflagellates in the genus *amoebophrya* and
31 its relationship to parasite biology and biogeography. *The Journal of eukaryotic*
32 *microbiology* **55**, 1–8; 10.1111/j.1550-7408.2007.00295.x (2008).

- 33 81. Moreira, D. & López-García, P. The rise and fall of Picobiliphytes: how assumed autotrophs
34 turned out to be heterotrophs. *BioEssays : news and reviews in molecular, cellular and*
35 *developmental biology* **36**, 468–474; 10.1002/bies.201300176 (2014).
- 36 82. Ishitani, Y., Febvre-Chevalier, C. & Febvre, J. Radiolaria. In *eLS*, edited by J. W. & S. Ltd
37 (John Wiley & Sons, Ltd, Chichester, UK, 2001), Vol. 57, pp. 1–6.
- 38 83. Georges, C., Monchy, S., Genitsaris, S. & Christaki, U. Protist community composition
39 during early phytoplankton blooms in the naturally iron-fertilized Kerguelen area (Southern
40 Ocean). *Biogeosciences* **11**, 5847–5863; 10.5194/bg-11-5847-2014 (2014).
- 41 84. Elbrächter, M. & Drebes, G. Life cycles, phylogeny and taxonomy of *Dissodinium*
42 and *Pyrocystis* (Dinophyta). *Helgolander Wiss. Meeresunters* **31**, 347–366;
43 10.1007/BF02189487 (1978).
- 44 85. Massana, R., Del Campo, J., Sieracki, M. E., Audic, S. & Logares, R. Exploring the
45 uncultured microeukaryote majority in the oceans: reevaluation of ribogroups within
46 stramenopiles. *ISME J* **8**, 854–866; 10.1038/ismej.2013.204 (2014).
- 47 86. Stentiford, G. D. & Shields, J. D. A review of the parasitic dinoflagellates *Hematodinium*
48 species and *Hematodinium*-like infections in marine crustaceans. *Diseases of aquatic*
49 *organisms* **66**, 47–70; 10.3354/dao066047 (2005).