

Table S1. A summary of phytoplankton growth and microzooplankton grazing rates measured from dilution experiments conducted in the summer (July-August) of 2009 and January of 2010 in surface waters (1 m). T: sea surface temperature (°C), NO₃: sea surface nitrate concentration (μmol l⁻¹), Chl: surface chlorophyll-a concentration (mg m⁻³), MZ: microzooplankton biomass (μg C l⁻¹). μ_nchl: phytoplankton growth rate with nutrient enrichment after correction of the effect of photoacclimation, μ₀chl: phytoplankton growth rate without nutrient enrichment, mchl_s: microzooplankton grazing rate, All rate units: d⁻¹. R_f/R_i: ratios of calculated chlorophyll-to-carbon ratios after and before incubation in undiluted and nutrient unenriched bottles. SE(m): standard error of microzooplankton grazing rate. The numbers in italics indicate grazing saturation. G_B%: Percentage of phytoplankton standing stock consumed by microzooplankton per day (=mchl x (e^{(μ₀chl - mchl) - 1})/ (μ₀chl - mchl)). G_P%: Percentage of primary production consumed by microzooplankton per day (= mchl/μ₀chl).

Sta.	Date	T	NO3	Chl	MZ	μ _n chl	μ ₀ chl	mchl	R _f /R _i	R ²	SE(m)	G _B %	G _P %
S1	20 Jul.	29.6	0.08	0.19	5.80	-0.05	0.27	0.42	0.80	0.73	0.18	39%	156%
S2	21 Jul.	29.7	0.14	0.1	3.90	0.2	0.06	0.09	0.95	0.12	0.15	9%	150%
S3	22 Jul.	29.6	0.15	0.18	1.16	0.49	0.57	0.42	0.73	0.93	0.07	45%	74%
S4	23 Jul.	29.7	0.04	0.09	2.80	0.53	0.65	0.36	1.14	0.64	0.16	42%	55%
S5	23 Jul.	29.7	0.07	0.14	2.85	0.39	0.6	0.23	0.70	0.24	0.23	28%	38%
S6	25 Jul.	28.6	0.08	0.17	4.72	1.26	0.86	0.08	0.64	0.07	0.15	12%	9%
S7	25 Jul.	29.4	0.07	0.12	2.00	0.87	0.91	0.67	0.82	0.86	0.16	76%	74%
S8	26 Jul.	29.5	0.09	0.12	1.85	0.67	0.56	0	0.74	0		0%	0%
S9	29 Jul.	29.9	0.14	1.5	4.98	1.51	1.34	1.56	1.05	0.95	0.38	140%	116%
S10	29 Jul.	30.1	0.16	0.97	9.00	1.42	1.03	1.07	0.92	0.96	<i>0.11</i>	105%	104%
S11	30 Jul.	29.7	0.13	0.11	3.90	1.31	1.03	0.62	0.86	0.6	0.3	77%	60%
S12	1 Aug.	29.8	0.13	0.12	2.03	0.71	0.68	0.13	1.11	0.65	0.05	17%	19%
S13	2 Aug.	29.7	0.11	0.18	13.02	1.32	1.26	0.53	0.64	0.97	0.06	78%	42%
S14	3 Aug.	29.3	0.11	0.08	2.85	1.95	1.65	0.39	0.78	0.59	0.19	78%	24%
S15	3 Aug.	29.3	0.1	0.16	2.71	1.57	1.1	0.82	1.05	0.96	<i>0.08</i>	95%	75%
S16	6 Aug.	28	0.14	0.71	7.11	2.24	2.11	1.73	0.49	0.94	0.25	210%	82%
S17	6 Aug.	28.6	0.13	0.25	4.38	0.79	0.59	0.53	0.97	0.86	0.13	55%	90%
S18	11 Aug.	28.6	0.1	0.16		1.02	0.87	0.12	0.86	0.17	0.15	18%	14%
S19	12 Aug.	28.8	0.08	0.11	1.33	0.94	0.84	0.05	1.00	0.04	0.13	8%	6%
S20	13 Aug.	29.7	0.1	0.15		1.18	0.71	0.24	1.01	0.76	0.08	31%	34%
S21	14 Aug.	29.3	0.08	0.19	1.19	1.26	1.06	0.29	1.00	0.75	0.09	44%	27%
S22	15 Aug.	28.9	0.1										
Median		29.6	0.1	0.16	2.85	1.02	0.86	0.39	0.86			44%	55%
W1	7 Jan.	18.4	4.76	1.33	5.64	0.3	0.27	0.18	0.86	0.93	0.03	19%	67%

W2	8 Jan.	22.8	0.61	0.66	3.81	0.52	0.48	0.34	0.96	0.92	0.06	36%	71%
W3	9 Jan.	21.4	0.97	1.06		0.52	0.45	0.26	0.89	0.66	0.11	29%	58%
W4	9 Jan.	18	11.67	1.28	3.91	0.99	1	0.32	0.89	0.84	0.08	46%	32%
W5	9 Jan.	22.7	0.69	0.65	2.46	0.97	0.99	0.39	0.75	0.80	0.11	53%	39%
W6	10 Jan.	24.1	0.1	0.56	3.75	1.33	0.31	0.46	0.74	0.47	0.35	43%	148%
W7	10 Jan.	24.6	0.22	0.3	4.42	1.07	1.01	0.41	1.05	0.84	0.1	56%	41%
W8	11 Jan.	24.5	0.25	0.53	5.53	0.82	0.8	0.35	0.92	0.97	0.04	44%	44%
W9	12 Jan.	24.8	0.1	0.23		0.72	0.73	0.32	1.12	0.83	0.05	40%	44%
W10	16 Jan.	24.1	0.21	0.81		0.66	0.5	0.02	0.71	0.03	0.06	3%	4%
W11	17 Jan.			0.55		0.99	0.93	0.31	0.80	0.95	0.04	43%	33%
W12	18 Jan.	23.2	0.24	0.71	2.77	0.84	0.73	0.27	0.87	0.88	0.06	34%	37%
W13	19 Jan.	22.7	0.62	0.57	2.39	1.01	0.83	0.14	0.76	0.69	0.07	21%	17%
W14	19 Jan.	21.3	0.9	0.47	28.09	0.77	0.77	0.11	0.79	0.63	0.05	16%	14%
W15	20 Jan.	16.8	6.58	2.37		0.24	-0.3	0.11	1.04	0.75	0.04	9%	
W16	20 Jan.	21.5	0.51	0.86	4.64	0.91	0.79	0.48	1.03	0.98	0.03	56%	61%
W17	21 Jan.	23.9	0.1	0.67	3.93	0.85	0.62	0.37	1.38	0.84	0.09	42%	60%
W18	22 Jan.	24.2	0.1	0.63	2.76	0.54	0.51	0.46	1.56	0.98	0.04	47%	90%
W19	23 Jan.	24.2	0.22	0.45	4.36	0.53	0.52	0.33	0.96	0.90	0.06	36%	63%
W20	24 Jan.	21.6	0.14	0.73	4.31	0.58	0.6	0.26	0.90	0.90	0.05	31%	43%
W21	24 Jan.	18.3	0.72	0.66	3.43	0.53	0.69	0.63	1.03	0.86	0.15	65%	91%
W22	25 Jan.	23.9	0.46	0.46	2.31	-0.02	-0.06	0.28	1.16	0.74	0.12	24%	
W23	27 Jan.	25.9	0.28	0.38		0.56	0.55	0.43	1.27	0.90	0.08	46%	78%
W24	28 Jan.	24.9	0.34	0.86		0.95	1.06	1.09	0.84	0.68	0.53	107%	103%
W25	29 Jan.	23.8	1.21	0.81	5.11	0.6	0.59	0.53	1.00	0.94	0.08	55%	90%
Median		23.5	0.4	0.66	3.92	0.72	0.62	0.33	0.92			42%	58%

Table S2.A summary of phytoplankton growth and grazing mortality rates at deep chlorophyll maximum layer (DCM).Depth: DCM depth (m).Other symbols the same as in Table 1.

Sta.	Depth	T	NO3	Chl	MZ	μ_i chl	μ_0 chl	mchl	R_p/R_i	R^2	SE(m)	$G_B\%$	$G_p\%$
S1	50	23.6	0.95	0.81	3.24	-0.28	-0.11	0.18	0.72	0.64	0.08	16%	
S2	50	24.7	0.75	0.34	2.10	0.34	0.48	0.41	1.08	0.86	0.1	42%	85%
S3	55	24.2	2.70	0.74	1.79	0.04	-0.03	0	0.77	0		0%	
S4	50	23.3	0.38	0.64	0.82	1.16	1.09	0.31	0.57	0.95	0.09	47%	28%
S5	75	22.0	4.10	0.54	1.35	-0.21	-0.12	0.16	0.77	0.46	0.12	14%	
S6	25	24.3	0.16	0.34	6.12	0.95	0.96	0.17	0.79	0.92	0.03	26%	18%
S7	50	26.2	0.06	0.43	2.52	0.7	0.75	0.36	1.16	0.79	0.1	44%	48%
S8	50	24.3	2.81	0.44	3.32	0.57	0.45	0.23	0.87	0.7	0.15	26%	51%
S9	50	24.1	0.55	0.89	1.59	0.21	0.23	0.26	0.89	0.99	0.02	26%	113%
S10	50	22.6	0.74	1.08	4.53	0.23	0.08	0.02	0.73	0.89	0.04	2%	25%
S11	50	24.7	1.01	1.1	3.23	0.46	0.4	0.09	0.74	0.37	0.07	11%	23%
S12	60	24.0	1.59	0.8	7.48	0.05	0.11	0.15	0.94	0.66	0.06	15%	136%
S13	75	22.6	4.55	0.54	25.09	0.19	0.16	0	0.62	0		0%	0%
S14	55	23.4		0.68	3.44	0.28	0.4	0.31	0.86	0.74	0.13	32%	78%
S15	60	24.2		0.65	4.91	0.2	0.16	0.22	1.03	0.74	0.08	21%	138%
S16	25	24.4	2.17	1.56	5.55	0.54	0.34	0.35	1.14	0.87	0.08	35%	103%
S17	50	23.1	1.28	0.7	4.51	0.51	0.44	0.05	1.04	0.11	0.08	6%	11%
S18	75	21.0	8.59	0.27		0.47	0.33	0.47	0.53	0.95	0.36	44%	142%
S19	70	23.1	0.14	0.48	1.52	0.17	0.06	0.22	0.97	0.83	0.06	20%	367%
S20													
S21	75	28.8	0.18	0.48	0.79	0.06	-0.05	0.12	1.48	0.28	0.11	11%	
S22	75	26.1	0.35	0.76		-0.05	-0.08	0.26	1.37	0.74	0.09	22%	
Median		24.1	0.95	0.65	3.24	0.23	0.23	0.22	0.87			21%	64%
W1													
W2	50	22.8	0.51	0.64	4.48	0.56	0.55	0.39	0.93	0.93	0.03	42%	71%
W3	25	21.3	1.07	0.93		0.47	0.39	0.42	0.89	0.92	0.05	41%	108%

W4	15	18.1	9.98	1.05	4.10	0.93	0.88	0.34	0.80	0.80	0.06	45%	38%
W5	25	22.7	0.71	0.68	6.41	0.83	0.72	0.33	0.79	0.96	0.03	40%	46%
W6	50	24.1	0.34	0.57	3.13	0.58	0.48	0.43	1.02	0.82	0.09	44%	90%
W7	50	24.5	0.23	0.51	8.34	1.06	0.8	0.3	0.76	0.87	0.05	39%	38%
W8	50	24.5	0.28	0.52		0.67	0.49	0.3	0.97	0.92	0.04	33%	61%
W9	75	24.1	7.28	0.34		0.31	0.54	0.5	0.92	0.88	0.07	51%	93%
W10	75	22.7	0.95	0.32		0.3	0.27	0.12	0.83	0.98	0.01	13%	44%
W11													
W12	50	23.2	0.28	0.62	4.02	0.65	0.61	0.32	0.99	0.88	0.02	37%	52%
W13	75	22.1	1.75	0.59	3.39	0.63	0.61	0.28	0.82	0.90	0.04	33%	46%
W14	25	21.3	0.89	0.49	3.93	0.37	0.31	0.21	1.06	0.74	0.05	22%	67%
W15	15	16.8	6.46	2.1		0.1	0.17	0.23	1.14	0.74	0.06	22%	135%
W16	25	21.5	0.53	0.93	18.93	0.49	0.40	0.38	1.16	0.90	0.02	38%	95%
W17	30	23.4	0.00	1.11	4.50	0.63	0.39	0.58	1.29	0.95	0.06	53%	149%
W18	50	24.1	0.46	0.74	4.68	0.32	0.30	0.29	1.03	0.85	0.03	29%	97%
W19	50	24.2	0.21	0.44	3.60	0.42	0.43	0.28	1.01	0.93	0.03	30%	65%
W20	15	21.6		0.76	7.80	0.31	0.22	0.14	0.90	0.64	0.02	14%	62%
W21	15	18.3	0.72	1.09	3.84	0.05	0.08	0.45	1.15	0.97	0.04	38%	563%
W22	50	23.9	0.91	0.37	1.48	0.32	0.18	0.34	0.98	0.76	0.09	31%	189%
W23	50	20.2	9.21	0.68									
W24	50	19.0	9.40	0.45		0.74	0.49	0.32	0.55	0.77	0.13	35%	65%
W25	50	24.0	1.30	0.79	1.93	0.67	0.6	0.47	0.96	0.88	0.07	50%	78%
Median		22.7	0.80	0.64	4.06	0.52	0.46	0.33	0.97			37%	69%
