The following supplement accompanies the article

Microzooplankton grazing along the Western Antarctic Peninsula

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Supplement. Detailed information for all dilution experiments conducted on the Palmer Antarctica Long-Term Ecological Research cruises in January 2009, 2010, and 2011, as well as experiments conducted near Palmer Station in March-April 2011.

Table S1. Phytoplankton growth (μ, d^{-1}) and grazing mortality (*g*, d^{-1}) rates calculated from dilution experiments performed at sites along the Western Antarctic Peninsula in January 2009, 2010, and 2011. Experiment numbers correspond with stations shown in Fig. 1. Lat: latitude, Long: longitude, chl *a*: the initial chlorophyll *a* concentration from the 100% treatment of each experiment, ± 1 SE. Water temperature was measured by CTD at the location where the water was collected for each experiment. Size fractions: Total: chl *a* on GF/F filters, nominal pore size 0.7 µm; Nano: nanophytoplankton (ca. 2 to 20 µm), and Pico: picoeukaryotes (ca. 1 to 2 µm); size fractions determined using flow cytometry in 2010 and 2011 but not for experiments done in 2009. P_i and P_p are the potential microzooplankton grazing pressure on initial phytoplankton stock and primary production, respectively. Rates that were not statistically significant (NS, $p > 0.05$) were categorized as (0) zero grazing (flat line, no significant difference among growth rates at all dilutions determined by ANOVA, $p > 0.05$) or (+) undetectable (scattered points, significant difference in growth rates among one or more dilution determined by ANOVA, $p < 0.05$). In experiments in which rates were not statistically significant for any size fraction, zero or undetectable grazing is indicated for each size fraction in the following order: Total, Nano, Pico

Expt. #	Date	Lat (° S), Long (° W)	Chl *a*	Water temp.	Size fraction	Dilution experiment		Growth (μ) and grazing (*g*) rates		Grazing pressure on stock (P_i) or daily production (P_p)	
	(dd-mo-yy)		(µg l^{-1})	(°C)		p-value	r^2	μ (d^{-1})	*g* (d^{-1})	P_i (%)	P_p (%)
1	08-Jan-09	64.46, 65.94	0.48 ± 0.03	1.2	Total	NS (0)	-	-	-	-	-
2	19-Jan-09	68.20, 70.00	1.26 ± 0.05	1.0	Total	NS (+)	-	-	-	-	-
3	26-Jan-09	69.50, 75.51	1.83 ± 0.01	0.18	Total	<0.01	0.70	0.13	0.12	11	89
4	08-Jan-10	64.47, 66.20	0.85 ± 0.06	0.14	-	NS (+,0,0)	-	-	-	-	-
5	18-Jan-10	68.20, 70.00	1.56 ± 0.15	0.44	Total	NS (0)	-	-	-	-	-

					Nano	NS (+)	-	-	-	-	-
					Pico	<0.01	0.53	0.50	0.28	24	62
6	26-Jan-10	69.82, 75.55	1.24 ± 0.03	–1.60	Total	<0.01	0.41	0.22	0.26	23	116
					Nano	NS (0)	-	-	-	-	-
					Pico	<0.01	0.51	0.46	0.31	26	71
7	27-Jan-10	69.50, 75.51	4.53 ± 0.38	–0.70	-	NS (0,0,+)	-	-	-	-	-
8	11-Jan-11	64.93, 64.40	0.85 ± 0.10	0.90	-	NS (+,0,0)	-	-	-	-	-
9	12-Jan-11	64.93, 64.40	1.64 ± 0.12	0.90	-	NS (+,0,0)	-	-	-	-	-
10	18-Jan-11	67.77, 69.27	7.40 ± 1.07	0.95	-	NS (+,0,0)	-	-	-	-	-
11	29-Jan-11	70.09, 76.15	4.13 ± 0.15	0.88	-	NS (+,0,+)	-	-	-	-	-
12	29-Jan-11	69.79, 76.17	12.7 ± 0.27	-0.70	-	NS (0,0,+)	-	-	-	-	-

Table S2. Phytoplankton growth (μ, d^{-1}) and grazing mortality (*g*, d^{-1}) rates calculated from dilution experiments conducted near Palmer Station (64.78° S, 64.04° W) in February and March 2011. Designations and measurements as in Table S1

Expt. #	Date	Chl *a*	Water temp.	Size fraction	Dilution experiment		Growth (μ) and grazing (*g*) rates		Grazing pressure on stock (P_i) or daily production (P_p)	
	(dd-mo-yy)	(μg l^{-1})	(°C)		p-value	r^2	μ (d^{-1})	*g* (d^{-1})	P_i (%)	P_p (%)
P1	09-Feb-11	4.33 ± 0.213	1.5	Total	<0.05	0.43	0.38	0.12	11	36
				Nano	<0.001	0.73	0.81	0.41	34	61
				Pico	<0.05	0.52	0.67	0.36	30	62
P2	11-Feb-11	2.25 ± 0.147	1.2	Total	<0.001	0.88	0.55	0.31	27	63
				Nano	<0.001	0.65	0.99	0.56	43	68
				Pico	<0.001	0.65	0.83	0.42	34	61
P3	15-Feb-11	0.651 ± 0.009	1.2	Total	<0.05	0.46	0.33	0.11	10	37
				Nano	NS (0)	-	-	-	-	-
				Pico	NS (+)	-	-	-	-	-
P4	16-Feb-11	0.706 ± 0.002	1.3	-	NS (0,0,0)	-	-	-	-	-
P5	26-Feb-11	0.917 ± 0.034	1.1	-	NS (+,+,0)	-	-	-	-	-
P6	15-Mar-11	1.37 ± 0.072	1.5	Total	<0.001	0.81	0.35	0.10	10	32
				Nano	<0.001	0.75	0.52	0.34	29	71
				Pico	NS (0)	-	-	-	-	-
P7	19-Mar-11	1.38 ± 0.021	1.2	-	NS (0,0,+)	-	-	-	-	-

Table S3. Summary of microzooplankton abundance (ind. l^{-1}) at the initial and final time points in dilution experiments done on the annual LTER oceanographic cruise in January of 2010 and 2011 as well as in experiments done at Palmer Station in February and March 2011. One sample (100% whole water treatment) analyzed for each time point. +: increased 25 to 100%, ++: more than doubled, §: decreased 25 to 50%, §§: decreased by more than half

Expt. #	Date	Time point	Athecate dinos	Aloricate ciliates	Tintinnids	Thecate dinos	Silicoflagellate
4	08-Jan-2010	Initial	1230	950	10	600	190
		Final	220§§	990	10	1030^{+}	130§
5	18-Jan-2010	Initial	1940	760	180	880	20
		Final			Sample lost		
6	26-Jan-2010	Initial	400	720	500	130	20
		Final	580^{+}	340§	300§	360^{++}	40^{++}
7	27-Jan-2010	Initial	1340	2210	4940	480	1890
		Final	2286^{+}	1160§	1960§	594^{+}	2880^{+}
8	11-Jan-2011	Initial	610	480	110	190	40
		Final	2290^{++}	1390^{++}	310^{++}	630^{++}	180^{++}
9	12-Jan-2011	Initial	250	450	90	380	10
		Final	1050^{++}	1160^{++}	280^{++}	1120^{++}	50^{++}
10	18-Jan-2011	Initial	2110	800	2780	390	140
		Final	3775^{+}	475§	3200	1075^{++}	75§
11	29-Jan-2011	Initial	3925	1500	963	1488	13
		Final	7038^{+}	700§	500§	1837	10
12	29-Jan-2011	Initial	2325	3525	1275	938	88
		Final	3320^{+}	3006	968	850	17§
P1	09-Feb-2011	Initial	980	2110	140	800	50
		Final	3390^{++}	960§	50§	1320^{+}	20§
P2	11-Feb-2011	Initial	1060	1620	50	180	10
		Final	1080	1910	40	690^{+}	10
P3	15-Feb-2011	Initial	930	2330	60	340	10
		Final	1000	2210	20§	170§	20^{+}
P4	16-Feb-2011	Initial	670	1200	30	100	10
		Final	850^{+}	963	25	75§	13^{+}
P5	26-Feb-2011	Initial	6350	39 080	780	1800	30
		Final	2330§§	3620§§	300§§	610§§	60^{++}
P6	15-Mar-2011	Initial	1420	1610	150	760	10
		Final	1020§	700§§	60§§	1200^{+}	40^{++}
P7	19-Mar-2011	Initial	1830	1180	50	470	50
		Final	1788	325§§	113^{++}	175§§	138^{++}

Table S4. Bacterial growth (μ, d^{-1}) and grazing mortality (g, d^{-1}) rates calculated from dilution experiments conducted at sites along the Western Antarctic Peninsula (WAP) in January 2010 and 2011. Experiment numbers correspond with stations shown in Fig. 1. Bacteria type: Total: total bacterial assemblage, HNA: high nucleic acid content bacteria, LNA: low nucleic acid content bacteria. Bacterial types were determined using flow cytometry. B_i and P_p are the potential microzooplankton grazing pressure on initial bacterial stock and production, respectively. Rates that were not statistically significant (NS, $p > 0.05$) were categorized as (0) zero grazing (flat line, no significant difference among growth rates at all dilutions determined by ANOVA, $p > 0.05$) or (+) undetectable (scattered points, significant difference in growth rates among one or more dilution determined by ANOVA, $p < 0.05$). In experiments in which rates were not statistically significant for any size fraction, zero or undetectable grazing is indicated for each size fraction in the following order: Total, HNA, LNA. See Table S1 for Palmer LTER station identification and locations as well as environmental conditions. Experiments in 2009 were not analyzed for bacterial growth and mortality rates. Bacterial types in *italics* indicate bacterial growth rates were significantly higher ($p < 0.05$) with nutrient enrichments compared to those without amendments

Expt. #	Date	Initial bacterial abundance	Water temp.	Bacteria type	Dilution experiment		Growth (μ) and grazing (g) rates		Grazing pressure on stock (B_i) or daily production (B_p)	
	(dd-mo-yy)	($\times 10^5$ cells ml^{-1})	(°C)		p-value	r^2	μ (d^{-1})	g (d^{-1})	B_i (%)	B_p (%)
4	08-Jan-10	3.98	0.14	Total	<0.05	0.50	0.04	0.09	9	208
				HNA	NS (0)	-	-	-	-	-
				LNA	<0.001	0.84	0.03	0.13	12	412
5	18-Jan-10	1.35	0.44	Total	NS (0)	-	-	-	-	-
				HNA	<0.05	0.55	0.22	0.19	17	88
				LNA	NS (+)	-	-	-	-	-
6	26-Jan-10	2.62	–1.60	Total	NS (0)	-	-	-	-	-
				HNA	NS (0)	-	-	-	-	-
				LNA	<0.05	0.30	0.06	0.06	6	100
7	27-Jan-10	9.15	–0.70	-	NS (0,+,+)	-	-	-	-	-
8	11-Jan-11	5.64	0.90	Total	<0.001	0.94	0.27	0.34	29	122
				HNA	<0.001	0.91	0.29	0.41	34	134
				LNA	<0.001	0.93	0.17	0.20	18	116
9	12-Jan-11	3.84	0.90	Total	<0.001	0.54	0.15	0.16	15	106
				HNA	<0.001	0.74	0.24	0.25	22	104
				LNA	NS (0)	-	-	-	-	-
10	18-Jan-11	2.62	0.95	Total	<0.001	0.94	0.82	0.38	32	56
				HNA	<0.001	0.93	0.95	0.43	35	61
				LNA	NS (+)	-	-	-	-	-
11	29-Jan-11	6.49	0.88	Total	<0.001	0.86	0.31	0.24	21	80
				HNA	<0.001	0.79	0.30	0.17	16	60
				LNA	NS (+)	-	-	-	-	-
12	29-Jan-11	6.58	-0.70	*Total*	<0.05	0.39	0.16	0.08	8	52
				HNA	<0.05	0.37	0.17	0.08	8	52
				LNA	NS (+)	-	-	-	-	-

Table S5. Bacterial growth and grazing mortality rates calculated from dilution experiments conducted near Palmer Station (64.78° S, 64.04° W) in February and March 2011. Designations and measurements as in Table S4

Expt. #	Date	Initial bacterial abundance	Water temp.	Bacteria type	Dilution experiment		Growth (μ) and grazing (*g*) rates		Grazing pressure on stock (B_i) or daily production (B_p)	
	(dd-mo-yy)	($\times 10^5$ cells ml^{-1})	(°C)		p-value	r^2	μ (d^{-1})	*g* (d^{-1})	B_i (%)	B_p (%)
P1	09-Feb-11	8.14	1.5	Total	<0.001	0.83	0.14	0.18	16	126
				HNA	<0.001	0.78	0.18	0.21	19	115
				LNA	<0.001	0.90	0.07	0.10	10	141
P2	11-Feb-11	7.31	1.2	Total	<0.05	0.56	0.31	0.17	16	59
				HNA	<0.05	0.57	0.36	0.20	18	60
				LNA	<0.05	0.44	0.23	0.11	10	51
P3	15-Feb-11	9.56	1.2	*Total*	<0.001	0.83	0.18	0.26	23	139
				HNA	<0.001	0.79	0.21	0.34	29	152
				LNA	<0.001	0.91	0.14	0.15	14	107
P4	16-Feb-11	8.94	1.3	Total	<0.001	0.92	0.16	0.23	21	139
				HNA	<0.001	0.88	0.19	0.32	27	158
				LNA	<0.001	0.96	0.13	0.15	14	114
P5	26-Feb-11	4.51	1.1	-	NS (0,+,+)	-	-	-	-	-
P6	15-Mar-11	2.17	1.5	Total	<0.05	0.30	0.11	0.05	5	47
				HNA	NS (0)	-	-	-	-	-
				LNA	<0.05	0.46	0.11	0.09	9	83
P7	19-Mar-11	6.50	1.2	Total	NS (+)	-	-	-	-	-
				HNA	<0.05	0.45	0.23	0.09	9	42
				LNA	NS (+)	-	-	-	-	-