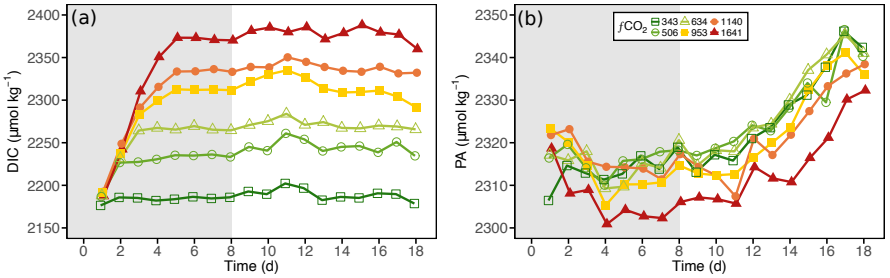

Figure S1. The (a) dissolved inorganic carbon (DIC), and (b) practical alkalinity (PA) carbonate chemistry conditions in each of the minicosm treatments over time. Grey shading indicates CO_2 and light acclimation period.

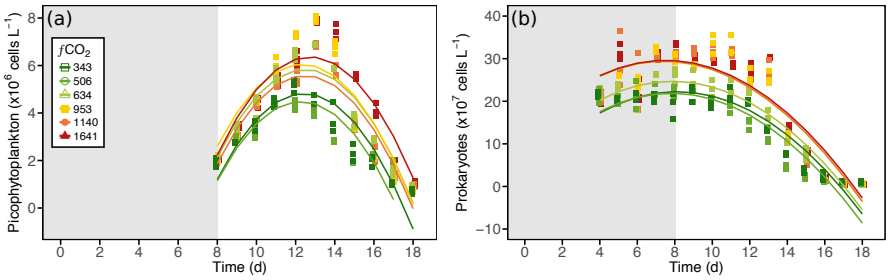

Figure S2. Model fit for (a) picophytoplankton and (b) prokaryote abundance in each of the minicosm treatments over time.

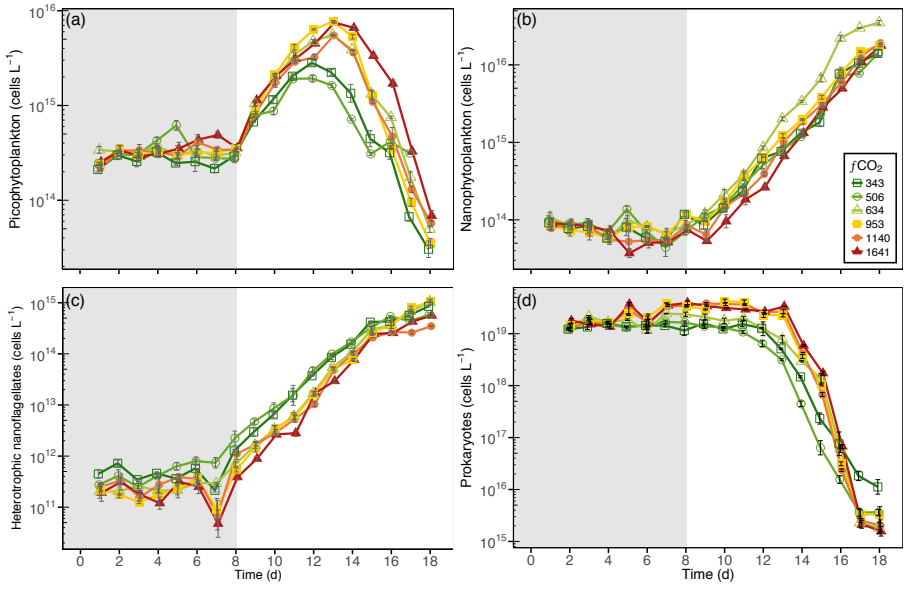

Figure S3. Log-transformed abundance of (a) picophytoplankton, (b) nanophytoplankton, (c) heterotrophic nanoflagellates, and (d) prokaryotes in each of the minicosm treatments over time. Error bars display standard error of pseudoreplicate samples. Grey shading indicates CO_2 and light acclimation period.

Table S1. Initial conditions of seawater sampled from Prydz Bay, Antarctica

Condition	Value
fCO_2, µatm	356 ± 6
pH_T	8.08
DIC, µmol kg^{-1}	2187 ± 6
PA, µmol kg^{-1}	2317 ± 6
Temperature, °C	-1.03 $\pm$ 0.17
Salinity	34.3
NOx, µM	26.19 ± 0.74
SRP, µM	1.74 ± 0.02
Silicate, µM	60.75 ± 0.91

Data are mean $\pm$ one standard deviation of all six minicosm measurements

Table S2. ANOVA table for trends in CO_2 treatment over time for picophytoplankton abundance

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Day	1	5.4 x 10^{13}	5.4 x 10^{13}	77.3	**<0.01**
I(Day^2)	1	4.8 x 10^{14}	4.8 x 10^{14}	686.1	**<0.01**
fCO_2	5	8.6 x 10^{13}	1.7 x 10^{13}	24.8	**<0.01**
Day:fCO_2	5	5.5 x 10^{12}	1.1 x 10^{12}	1.6	0.16
Residuals	182	1.3 x 10^{14}	6.9 x 10^{11}		

Bold text denotes significant p-values (<0.05).

Table S3. ANOVA table for trends in CO_2 treatment over time for nanophytoplankton abundance

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Day	1	2.5 x 10^{15}	2.5 x 10^{15}	3850.4	**<0.01**
I(Day^2)	1	1.0 x 10^{15}	1.0 x 10^{15}	1627.9	**<0.01**
fCO_2	5	7.2 x 10^{13}	1.4 x 10^{13}	22.4	**<0.01**
Day:fCO_2	5	9.9 x 10^{13}	2.0 x 10^{13}	31.0	**<0.01**
Residuals	311	2.0 x 10^{14}	6.3 x 10^{11}		

Bold text denotes significant p-values (<0.05).

Table S4. ANOVA table for trends in CO_2 treatment over time for heterotrophic nanoflagellate abundance

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Day	1	2.0 x 10^{14}	2.0 x 10^{14}	5832.7	**<0.01**
I(Day^2)	1	5.6 x 10^{13}	5.6 x 10^{13}	1630.0	**<0.01**
fCO_2	5	2.4 x 10^{12}	4.8 x 10^{11}	13.9	**<0.01**
Day:fCO_2	5	2.7 x 10^{12}	5.4 x 10^{11}	15.8	**<0.01**
Residuals	307	1.0 x 10^{13}	3.4 x 10^{10}		

Bold text denotes significant p-values (<0.05).

Table S5. ANOVA table for trends in CO_2 treatment over time for prokaryote abundance

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Day	1	1.9 x 10^{18}	1.9 x 10^{18}	1076.7	**<0.01**
I(Day^2)	1	6.4 x 10^{17}	6.4 x 10^{17}	363.5	**<0.01**
fCO_2	5	2.3 x 10^{17}	4.6 x 10^{16}	26.2	**<0.01**
Day:fCO_2	5	1.2 x 10^{16}	2.4 x 10^{15}	1.4	0.24
Residuals	256	4.5 x 10^{17}	1.7 x 10^{15}		

Bold text denotes significant p-values (<0.05).

Table S6. ANOVA table comparing trends of picophytoplankton growth rates with heterotrophic nanoflagellate abundance on day 13

	Estimate	Std. Error	t value	Pr(>t)
(Intercept)	2.7 x 10^{-1}	4.2 x 10^{-2}	6.5	**<0.01**
HNF	-9.1 x 10^{-3}	1.4 x 10^{-2}	-0.2	0.84
Residual standard error: 0.03 on 16 degrees of freedom				
Multiple R-squared: 0.003, Adjusted R-squared: -0.06				
F-statistic: 0.04 on 1 and 16 DF, p-value: 0.84				

Bold text denotes significant p-values (<0.05). HNF; heterotrophic nanoflagellates.

Table S7. ANOVA table comparing trends of prokryote growth rates with heterotrophic nanoflagellate abundance on day 8

	Estimate	Std. Error	t value	Pr(>t)
(Intercept)	9.4 x 10^{-2}	2.1 x 10^{-2}	4.5	**<0.01**
HNF	-3.4 x 10^{-7}	1.3 x 10^{-7}	-2.7	**0.01**
Residual standard error: 0.03 on 16 degrees of freedom				
Multiple R-squared: 0.32, Adjusted R-squared: 0.28				
F-statistic: 7.46 on 1 and 16 DF, p-value: **0.01**				

Bold text denotes significant p-values (<0.05). HNF; heterotrophic nanoflagellates.