

Appendix 2 Table S1. Summary statistics for the generalized additive mixed model (GAMM) used to assess the effect of the copepodamide treatment in the batch experiment.

		Estimate	Std. error	t value	<i>P</i>
Cell volume	Intercept	3844.59	40.24	95.54	<0.001
	Treatment	-397.48	56.91	-6.99	<0.001
Nitrate	Intercept	31.98	0.72	44.22	<0.001
	Treatment	-3.17	1.02	-3.11	0.003
Cell nitrogen	Intercept	118.68	4.54	26.13	<0.001
	Treatment	15.57	6.42	2.42	0.022
Cell carbon	Intercept	696.74	19.93	34.96	<0.001
	Treatment	138.36	28.18	4.91	<0.001
C:N ratio	Intercept	6.61	0.07	89.99	<0.001
	Treatment	0.63	0.10	6.08	<0.001
Cell toxin	Intercept	8.28	0.98	8.49	<0.001
	Treatment	14.81	1.38	10.73	<0.001
Rejection	Intercept	0.38	0.03	13.82	<0.001
	Treatment	0.15	0.04	3.89	<0.001

Appendix 2 Table S2. Summary statistics for multiple regression analysis on the relationship between cell nitrogen ( $\text{pg N } \mu\text{m}^{-3}$ ) or carbon ( $\text{pg C } \mu\text{m}^{-3}$ ), and growth ( $\text{d}^{-1}$ ) in the batch and exponentially fed batch culture (EFB) experiments. Growth rate is calculated from change in biovolume ( $\mu\text{m}^3 \text{mL}^{-1}$ ). ‘Lower’ and ‘Upper’ refers to 95% confidence intervals.

			Estimate	Std. Error	Lower	Upper	<i>P</i>
Batch	Log cell nitrogen	Intercept	-1.594	0.041	-1.677	-1.512	<0.001
		Growth	0.420	0.126	0.164	0.678	0.002
		Treatment	0.097	0.044	0.008	0.187	0.034
	Log cell carbon	Intercept	-0.684	0.020	-0.725	-0.643	<0.001
		Growth	-0.181	0.062	-0.307	-0.054	0.007
		Treatment	0.123	0.022	0.078	0.167	<0.001
EFB	Log cell nitrogen	Intercept	-1.546	0.019	-1.584	-1.508	<0.001
		Growth	0.363	0.067	0.230	0.497	<0.001
		Treatment	0.090	0.022	0.045	0.135	<0.001
	Log cell carbon	Intercept	-0.594	0.016	-0.625	-0.563	<0.001
		Growth	-0.654	0.055	-0.764	-0.545	<0.001
		Treatment	0.115	0.017	0.078	0.152	<0.001

Appendix 2 Table S3. Summary for exponentially fed batch culture experiments. The values are averaged over time and show means  $\pm$  standard deviation.

D. rate	Treatment	Dose	Abundance	Cell growth	N cell mass	N growth	Cell volume	Cell N	Cell C	C:N ratio	Cell toxin	Rejection
d <sup>-1</sup>			cells mL <sup>-1</sup>	d <sup>-1</sup>	$\mu\text{g N mL}^{-1}$	d <sup>-1</sup>	$\mu\text{m}^{-3}$	pg N cell <sup>-1</sup>	pg C cell <sup>-1</sup>		fmol cell <sup>-1</sup>	
0.05	Control	Low	9591 $\pm$ 1450	0.000 $\pm$ 0.004	0.681 $\pm$ 0.061	0.022 $\pm$ 0.038	3399 $\pm$ 126	70.5 $\pm$ 5.25	795 $\pm$ 40	11.16 $\pm$ 0.91	1.28 $\pm$ 0.23	0.16 $\pm$ 0.04
0.05	Induced	Low	10173 $\pm$ 1816	-0.012 $\pm$ 0.023	0.806 $\pm$ 0.082	0.020 $\pm$ 0.010	3459 $\pm$ 51	79.8 $\pm$ 7.48	956 $\pm$ 47	12.05 $\pm$ 0.76	1.45 $\pm$ 0.69	0.22 $\pm$ 0.11
0.10	Control	Low	2282 $\pm$ 1022	-0.036 $\pm$ 0.036	0.221 $\pm$ 0.029	0.096 $\pm$ 0.157	3899 $\pm$ 343	147 $\pm$ 43	1644 $\pm$ 448	11.26 $\pm$ 0.29	0.63 $\pm$ 0.14	0.35 $\pm$ 0.08
0.10	Induced	Low	2187 $\pm$ 904	-0.025 $\pm$ 0.057	0.203 $\pm$ 0.108	0.143 $\pm$ 0.048	3065 $\pm$ 217	131 $\pm$ 44	1518 $\pm$ 524	11.48 $\pm$ 0.49	0.58 $\pm$ 0.08	0.69 $\pm$ 0.06
0.20	Control	Low	5133 $\pm$ 416	0.191 $\pm$ 0.094	0.608 $\pm$ 0.039	0.190 $\pm$ 0.057	3317 $\pm$ 78	119 $\pm$ 6.9	553 $\pm$ 28	4.65 $\pm$ 0.10	2.29 $\pm$ 2.22	0.28 $\pm$ 0.08
0.20	Induced	Low	5391 $\pm$ 402	0.232 $\pm$ 0.070	0.691 $\pm$ 0.087	0.208 $\pm$ 0.064	3308 $\pm$ 138	160 $\pm$ 20	789 $\pm$ 79	4.97 $\pm$ 0.41	7.16 $\pm$ 4.18	0.42 $\pm$ 0.11
0.20	Control	High	3942 $\pm$ 145	0.193 $\pm$ 0.034	0.560 $\pm$ 0.014	0.193 $\pm$ 0.043	4173 $\pm$ 190	142 $\pm$ 7.1	669 $\pm$ 27	4.75 $\pm$ 0.14	3.62 $\pm$ 0.76	0.24 $\pm$ 0.08
0.20	Induced	High	3738 $\pm$ 163	0.204 $\pm$ 0.043	0.680 $\pm$ 0.036	0.228 $\pm$ 0.030	3800 $\pm$ 160	183 $\pm$ 4.1	903 $\pm$ 17	4.94 $\pm$ 0.13	21.40 $\pm$ 0.90	0.47 $\pm$ 0.08
0.40	Control	Low	4611 $\pm$ 333	0.359 $\pm$ 0.087	0.726 $\pm$ 0.090	0.323 $\pm$ 0.081	3862 $\pm$ 211	158 $\pm$ 15	635 $\pm$ 49	4.03 $\pm$ 0.15	22.7 $\pm$ 0.34	0.28 $\pm$ 0.06
0.04	Induced	Low	4390 $\pm$ 289	0.343 $\pm$ 0.012	0.724 $\pm$ 0.074	0.365 $\pm$ 0.121	3753 $\pm$ 119	165 $\pm$ 13	670 $\pm$ 57	4.06 $\pm$ 0.12	4.18 $\pm$ 1.31	0.38 $\pm$ 0.14

Appendix 2 Table S4. Summary for exponentially fed batch culture experiments, normalized by cell volume to account for differences in size. The values are averaged over time and show  $\pm$  standard deviation.

Dil. rate $\text{d}^{-1}$	Treatment	Dose	Biovolume $\times 10^7 \mu\text{m}^3 \text{mL}^{-1}$	Growth $\text{d}^{-1}$	Cell N $\text{pg N } \mu\text{m}^{-3}$	Cell C $\text{pg C } \mu\text{m}^{-3}$	Cell toxin $\text{amol } \mu\text{m}^{-3}$
0.05	Control	Low	3.269 $\pm$ 0.562	-0.011 $\pm$ 0.024	0.021 $\pm$ 0.002	0.234 $\pm$ 0.016	0.40 $\pm$ 0.06
0.05	Induced	Low	3.520 $\pm$ 0.658	-0.015 $\pm$ 0.030	0.023 $\pm$ 0.002	0.278 $\pm$ 0.015	0.45 $\pm$ 0.20
0.10	Control	Low	0.870 $\pm$ 0.340	-0.052 $\pm$ 0.076	0.036 $\pm$ 0.010	0.40 $\pm$ 0.11	0.16 $\pm$ 0.03
0.10	Induced	Low	0.660 $\pm$ 0.256	-0.066 $\pm$ 0.120	0.042 $\pm$ 0.015	0.48 $\pm$ 0.17	0.19 $\pm$ 0.03
0.20	Control	Low	1.705 $\pm$ 0.113	0.217 $\pm$ 0.042	0.040 $\pm$ 0.003	0.167 $\pm$ 0.01	0.69 $\pm$ 0.68
0.20	Induced	Low	1.783 $\pm$ 0.166	0.234 $\pm$ 0.038	0.053 $\pm$ 0.007	0.261 $\pm$ 0.03	2.23 $\pm$ 1.37
0.20	Control	High	1.644 $\pm$ 0.048	0.208 $\pm$ 0.024	0.034 $\pm$ 0.001	0.160 $\pm$ 0.01	0.88 $\pm$ 0.16
0.20	Induced	High	1.421 $\pm$ 0.111	0.203 $\pm$ 0.064	0.048 $\pm$ 0.003	0.238 $\pm$ 0.01	5.40 $\pm$ 0.38
0.40	Control	Low	1.772 $\pm$ 0.066	0.372 $\pm$ 0.043	0.041 $\pm$ 0.005	0.165 $\pm$ 0.01	0.59 $\pm$ 0.09
0.40	Induced	Low	1.651 $\pm$ 0.141	0.340 $\pm$ 0.053	0.044 $\pm$ 0.004	0.180 $\pm$ 0.02	1.11 $\pm$ 0.35

Appendix 2 Table S5. Type III analysis of variance (ANOVA) on the fixed effects in the linear mixed models used to analyze the effect of the copepodamide treatment in low dose (0.63 nM) EFB experiments. *P*-values are provided via Satterthwaite's of freedom method. Some variables were log-transformed to homogenize variances. Only variables where the post-hoc test found significant differences between treatments are reported.

		Sum Sq.	NumDF	DenDF	F	<i>P</i>
Cell volume	Treatment	53547	1	92	0.856	0.356
	Time	380975	1	75	6.117	0.016
	Dil. rate	2944857	3	16	15.762	<0.001
	Treatment×Time	35618	1	75	0.572	0.452
	Treatment×Dil rate	2819502	3	16	15.091	<0.001
Nitrogen cell mass	Treatment	0.00017	1	79	2.856	0.854
	Time	0.08307	1	65	16.868	<0.001
	Dil. rate	0.96757	3	18	65.495	<0.001
	Treatment×Time	0.00279	1	65	0.566	0.455
	Treatment×Dil rate	0.02323	3	18	1.573	0.231
Cell toxins	Treatment	161.76	1	91	44.823	<0.001
	Time	33.64	1	74	9.321	0.003
	Dil. rate	1579.71	3	15	145.906	<0.001
	Treatment×Time	7.71	1	75	2.136	0.148
	Treatment×Dil rate	909.56	3	15	84.009	<0.001
Log cell nitrogen*	Treatment	0.00030	1	80	0.065	0.800
	Time	0.06384	1	80	13.609	<0.001
	Dil. rate	1.54569	3	80	109.838	<0.001
	Treatment×Time	0.00494	1	80	1.053	0.308
	Treatment×Dil rate	0.08440	3	80	5.997	<0.001
Log cell carbon*	Treatment	0.00059	1	80	0.126	0.723
	Time	0.94938	1	80	10.573	0.002
	Dil. rate	1.08142	3	80	77.176	<0.001
	Treatment×Time	0.01077	1	80	2.305	0.133
	Treatment×Dil rate	0.11553	3	80	8.245	<0.001
Log rejection*	Treatment	0.15072	1	52	4.334	0.043
	Time	0.01625	1	52	0.467	0.497
	Dil. rate	1.69767	3	52	16.271	<0.001
	Treatment×Time	0.03181	1	52	0.915	0.343

Treatment×Dil rate	0.09947	3	52	0.953	0.422
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\*: Random effect variances estimated as (close to) zero.

Appendix 2 Table S6. Type III analysis of variance (ANOVA) on the fixed effects in the linear mixed models used to analyze the effect of the copepodamide treatment in high dose (6 nM) repeated 0.2 d<sup>-1</sup> dilution rate EFB experiment. *P*-values are provided via Satterthwaite's degrees of freedom method. Only variables where the post-hoc test found significant differences between treatments are reported.

		Sum Sq.	NumDF	DenDF	F	<i>P</i>
Cell volume*	Treatment	27104	1	20	0.890	0.357
	Time	431937	1	20	14.183	0.001
	Treatment×Time	17325	1	20	0.569	0.459
Cell toxins	Treatment	136.698	1	18	37.723	<0.001
	Time	0.306	1	16	0.085	0.775
	Treatment×Time	0.536	1	16	0.148	0.706
Cell nitrogen	Treatment	2005	1	20	11.010	0.003
	Time	114	1	16	0.682	0.440
	Treatment×Time	219	1	16	1.212	0.287
Cell carbon*	Treatment	54997	1	20	14.033	0.001
	Time	224	1	20	0.057	0.814
	Treatment×Time	3094	1	20	0.789	0.385
Log rejection*	Treatment	0.164	1	17	9.460	0.007
	Time	0.001	1	17	0.010	0.921
	Treatment×Time	0.033	1	17	1.919	0.184

\*: Random effect variances estimated as (close to) zero.

Appendix 2 Figure S1.

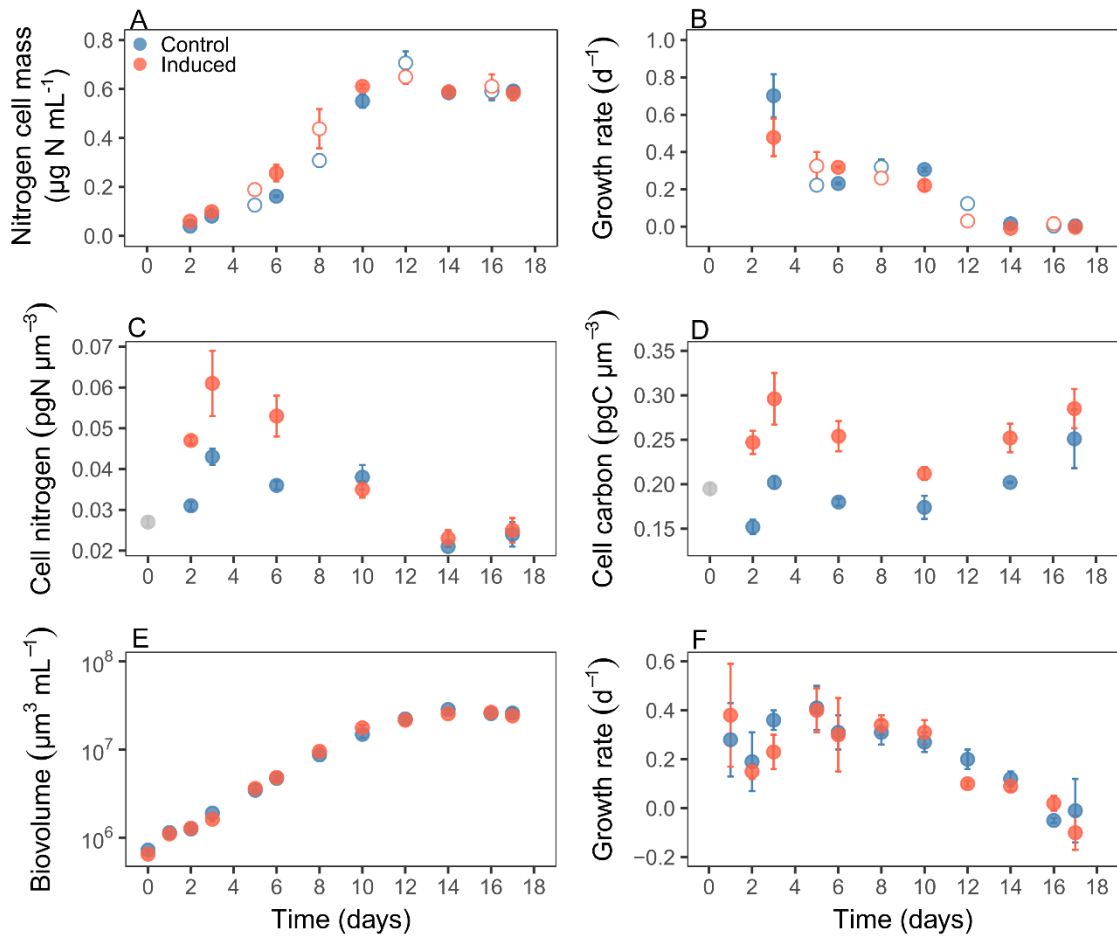


Figure S1. Change in (A) nitrogen cell mass ( $\mu\text{g N mL}^{-1}$ ), (B) growth calculated from A ( $\text{d}^{-1}$ ), (C) cell nitrogen ( $\text{pg N } \mu\text{m}^{-3}$ ) and (D) carbon ( $\text{pg C } \mu\text{m}^{-3}$ ) per cell volume, (E) biovolume ( $\mu\text{m}^3 \text{ mL}^{-1}$ ), and (F) growth ( $\text{d}^{-1}$ ) calculated from E, over time in the batch culture experiment. The grey points in C and D are initial values taken from the stock culture. Empty symbols in A and B are interpolated values to improve resolution. Values are means and error bars show standard error ( $n = 3$ ).



Appendix 2 Figure S2.

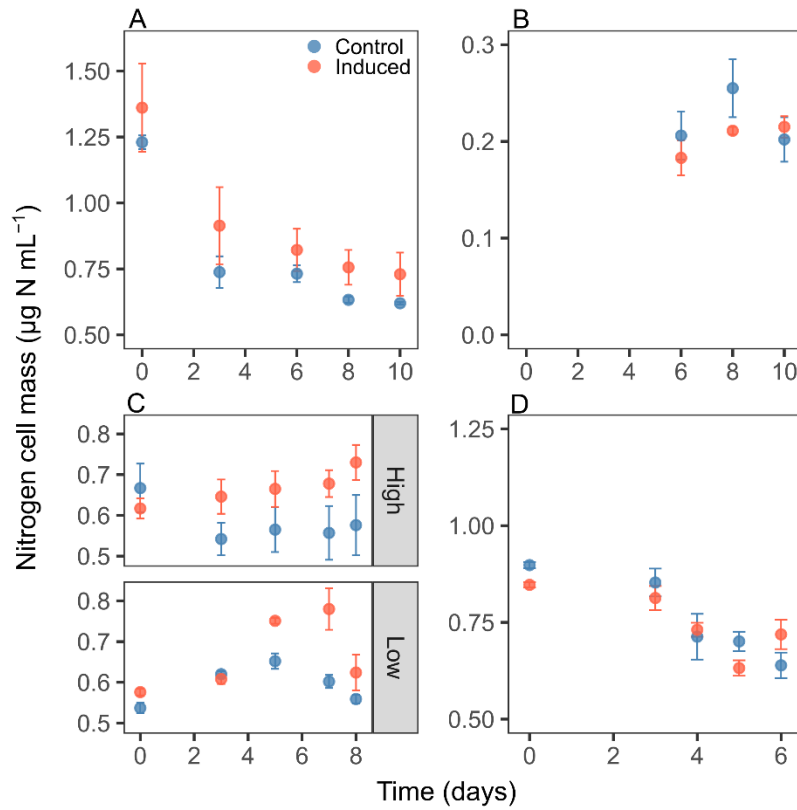


Figure S2. Change in nitrogen cell mass ( $\mu\text{g N mL}^{-1}$ ) in the EFB at the different dilution rates. (A)  $0.05 \text{ d}^{-1}$ , (B)  $0.10 \text{ d}^{-1}$ , (C)  $0.20 \text{ d}^{-1}$  with high (6 nM) and low (0.63 nM) dose of copepodamides, (D)  $0.40 \text{ d}^{-1}$ . The values are means and error bars show standard error (n=3).

Note the different y-axes scales.