

## Identity of the limiting nutrient (N vs. P) affects the competitive success of mixotrophs

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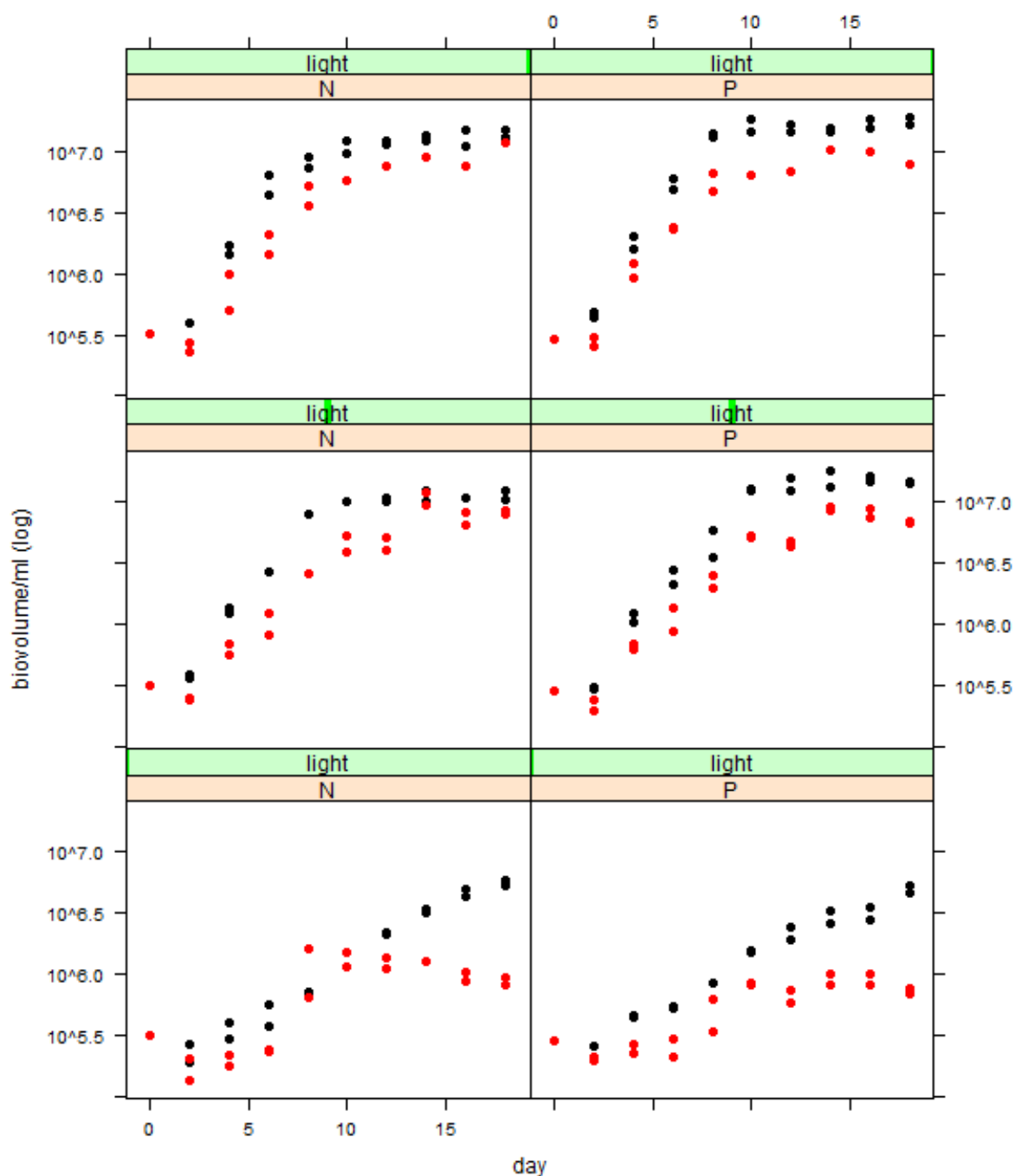


Figure S1: Development of the total community biovolume ( $\mu\text{m}^3 \text{ml}^{-1}$ ) over time in dependence of light intensity (from top to bottom decreasing light) and dilution rate (black dots:  $D=0.1 \text{d}^{-1}$ ; red dots:  $D=0.3 \text{d}^{-1}$ ) under both nutrient limitations (excluding heterotrophic bacteria).

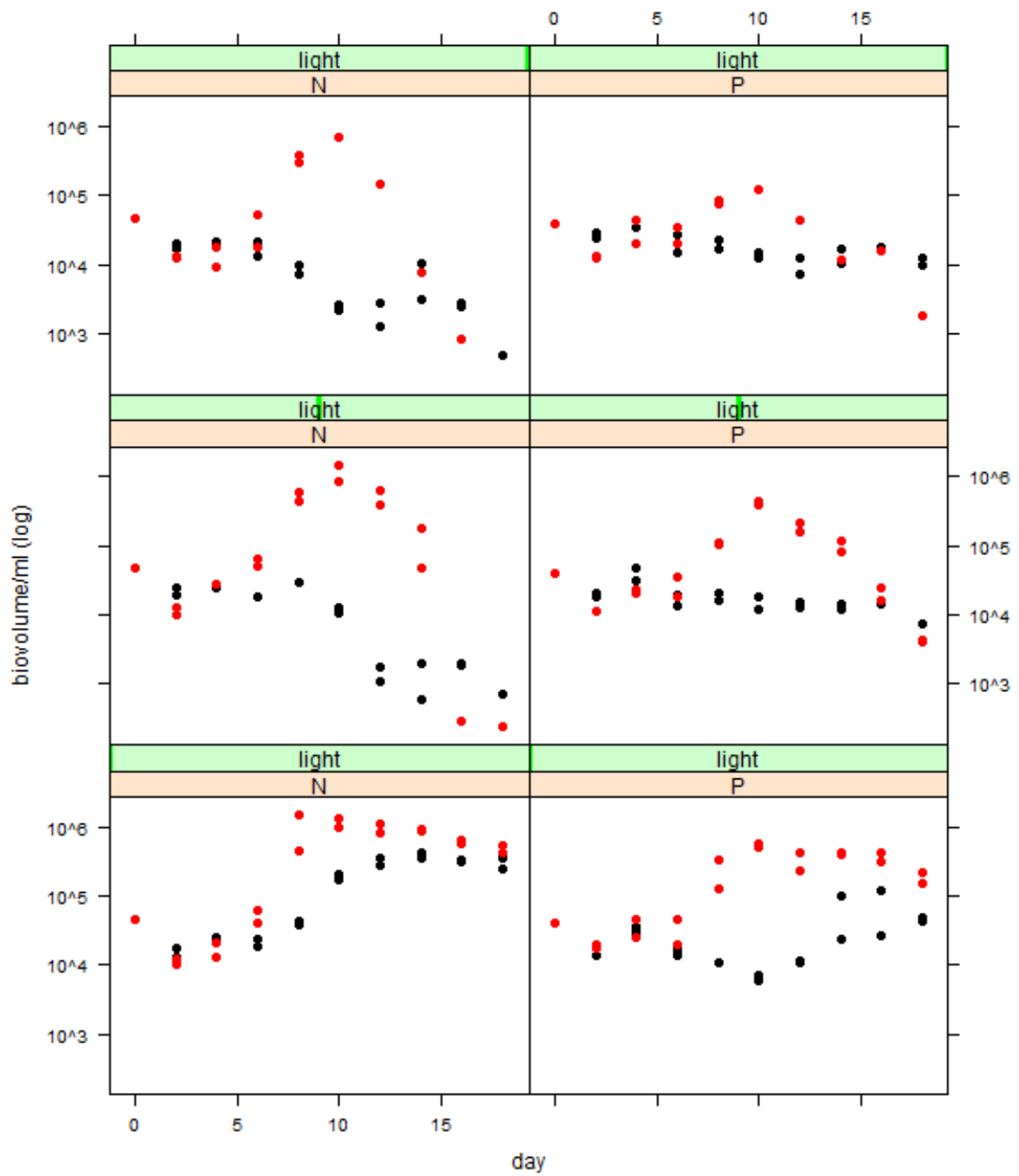


Figure S2: Development of the heterotroph (biovolume;  $\mu\text{m}^3 \text{ml}^{-1}$ ), *Cafeteria roenbergensis*, over time in dependence of light intensity (from top to bottom decreasing light) and dilution rate (black dots:  $D=0.1 \text{ d}^{-1}$ ; red dots:  $D=0.3 \text{ d}^{-1}$ ) under both nutrient limitations.

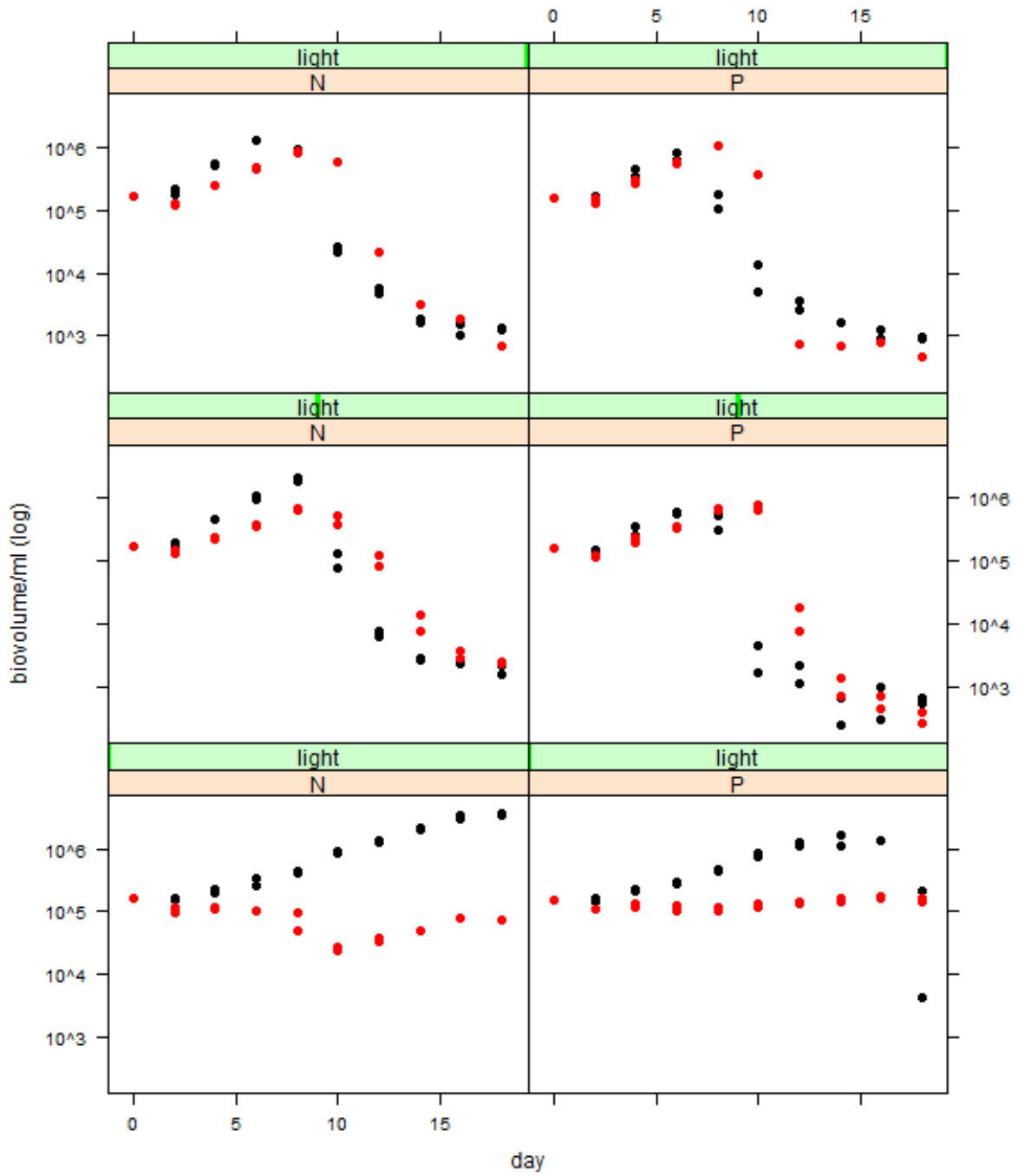


Figure S3: Development of the cyanobacteria (biovolume;  $\mu\text{m}^3 \text{ ml}^{-1}$ ), *Synechococcus sp.*, over time in dependence of light intensity (from top to bottom decreasing light) and dilution rate (black dots:  $D=0.1 \text{ d}^{-1}$ ; red dots:  $D=0.3 \text{ d}^{-1}$ ) under both nutrient limitations.

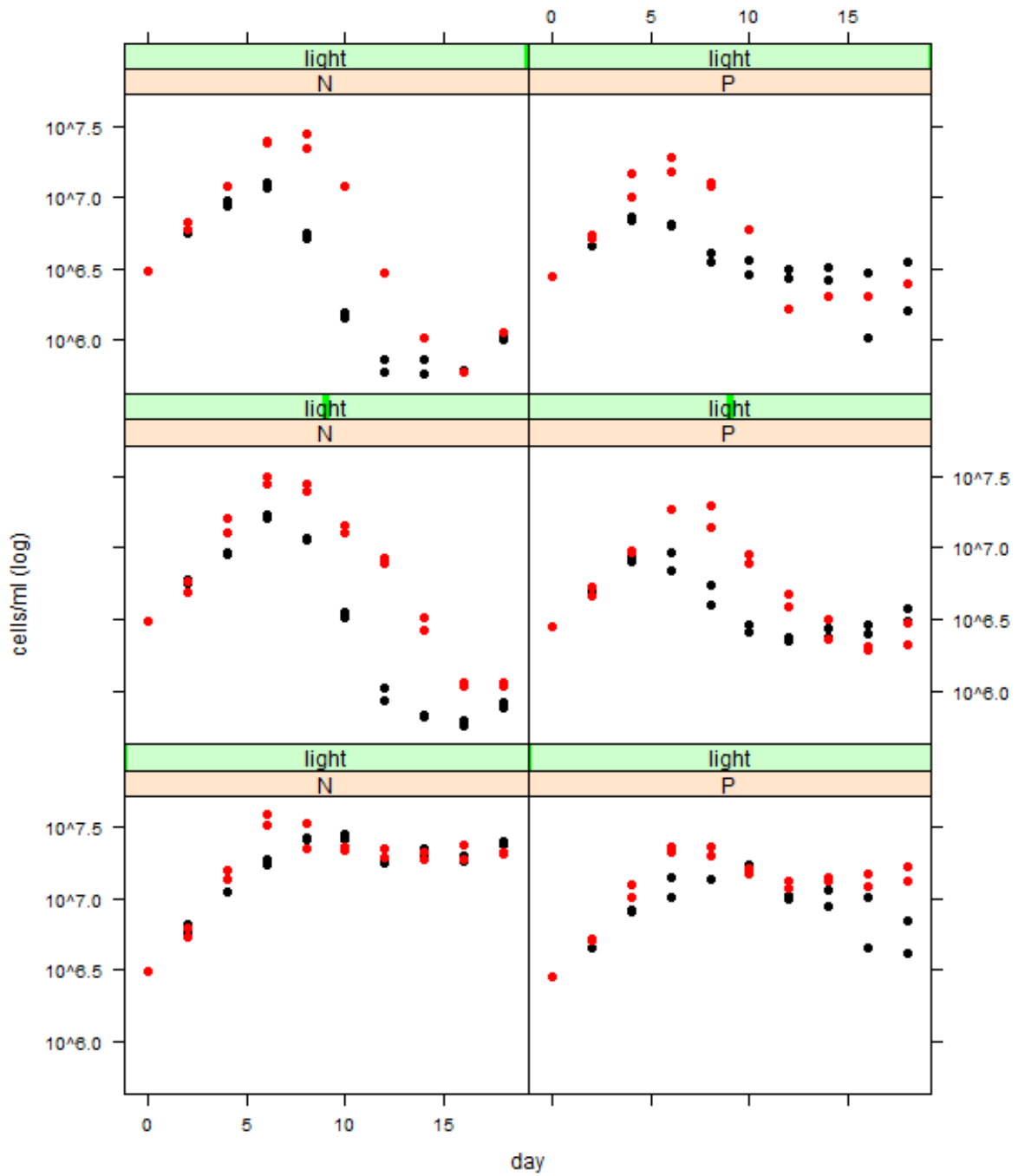


Figure S4: Development the heterotrophic bacteria (cells  $\text{ml}^{-1}$ ) over time in dependence of light intensity (from top to bottom decreasing light) and dilution rate (black dots:  $D=0.1 \text{ d}^{-1}$ ; red dots:  $D=0.3 \text{ d}^{-1}$ ) under both nutrient limitation

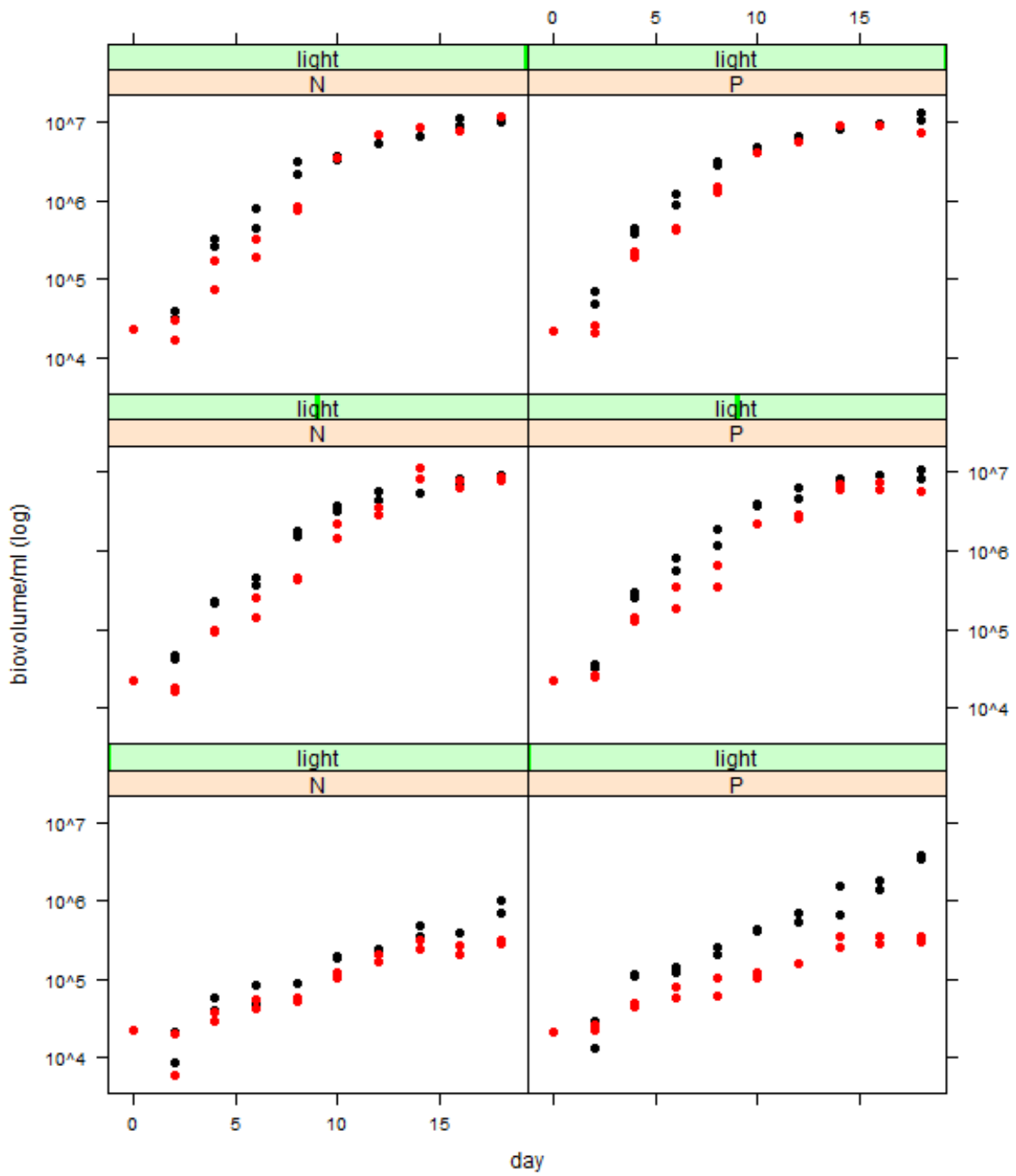


Figure S5: Development of the mixotroph (biovolume;  $\mu\text{m}^3 \text{ml}^{-1}$ ), *Ochromonas minima*, over time in dependence of light intensity (from top to bottom decreasing light) and dilution rate (black dots:  $D=0.1 \text{ d}^{-1}$ ; red dots:  $D=0.3 \text{ d}^{-1}$ ) under both nutrient limitations.

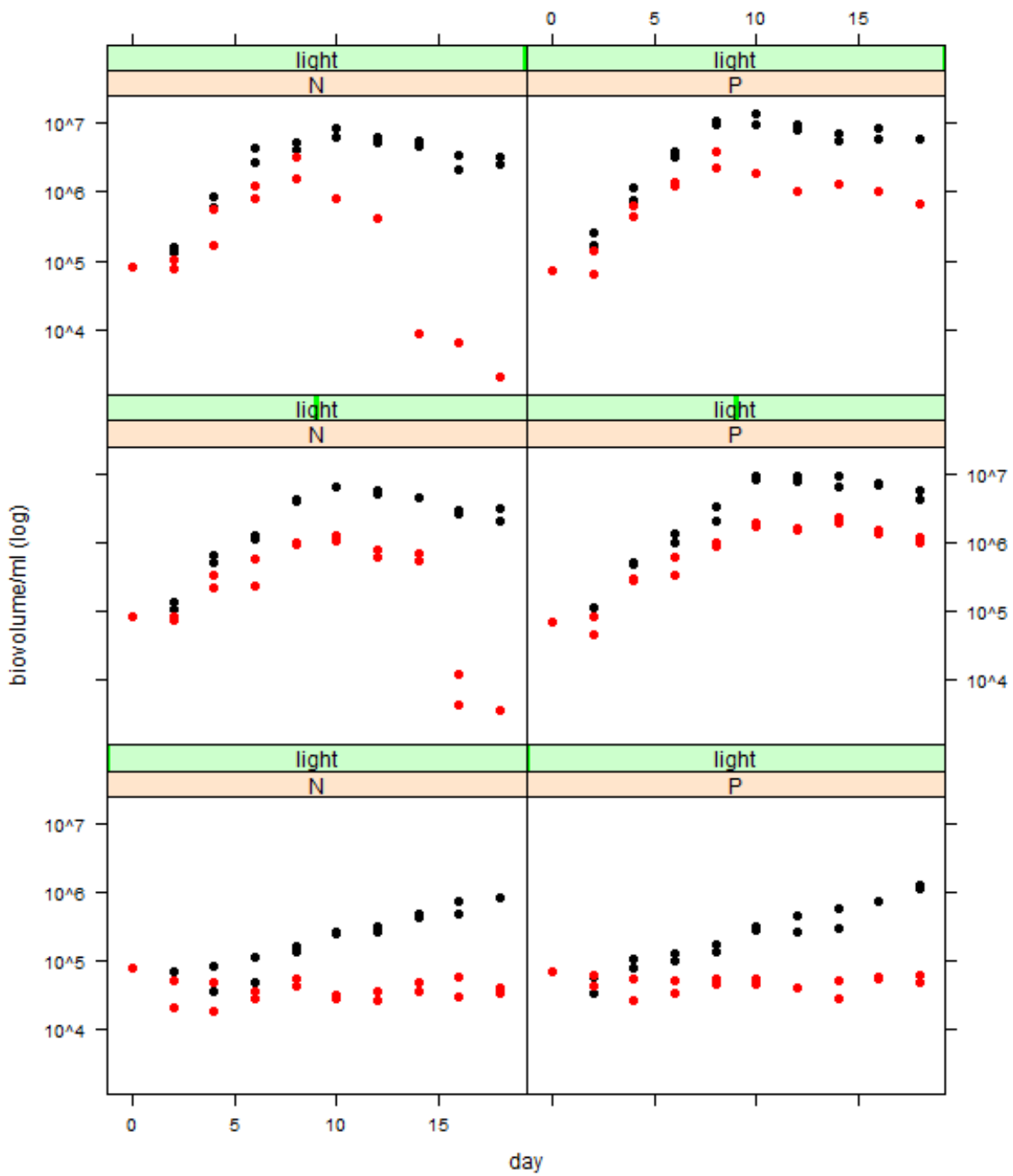


Figure S6: Development of the autotroph (biovolume;  $\mu\text{m}^3 \text{ml}^{-1}$ ), *Dunaliella sp.*, over time in dependence of light intensity (from top to bottom decreasing light) and dilution rate (black dots:  $D=0.1 \text{ d}^{-1}$ ; red dots:  $D=0.3 \text{ d}^{-1}$ ) under both nutrient limitations.

Table S1: Maximal observed growth rates ( $\mu_{\max}$  d<sup>-1</sup>) of the protists, for each treatment combination (calculated based on the smoothed fit used in Fig. 1 and 2; corrected for dilution)

	<b>N-limitation</b>						<b>P-limitation</b>					
	<b>D = 0.1</b>			<b>D = 0.3</b>			<b>D = 0.1</b>			<b>D = 0.3</b>		
	<b>10</b>	<b>35</b>	<b>60</b>	<b>10</b>	<b>35</b>	<b>60</b>	<b>10</b>	<b>35</b>	<b>60</b>	<b>10</b>	<b>35</b>	<b>60</b>
<b>light</b>												
<b>mixotroph</b>	0.42	0.76	0.83	0.99	1.18	1.19	0.50	0.82	0.90	0.84	1.08	1.22
<b>heterotroph</b>	0.73	0.48	0.53	1.67	1.31	1.75	0.71	0.13	0.25	1.24	1.22	0.91
<b>autotroph</b>	0.47	0.79	1.02	0.67	0.98	1.23	0.39	0.74	0.93	0.66	1.01	1.27

Table S2: Dependence of abundances (calculated average of the last three sampling days) of the different species in the food web and of the relative fraction of mixotrophs on total bacterivores biovolume and on total pigmented protists biovolume from light intensity and dilution rate under N- or P-limitation at the end of the experiment (based on a linear model which allows for a combined effect of light intensity and dilution rate).

	N-limitation									
	light			dilution			light*dilution			R <sup>2</sup>
	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p	
<b>mixotroph</b>	169132	61399	<b>0.0283</b>	-19262535	11130891	0.8675	111625	296295	0.7175	0.80
<b>heterotroph</b>	-2650	4545	0.5781	1856491	823942	0.0589	-40188	21933	0.1096	0.72
<b>autotroph</b>	88093	18299	<b>0.0019</b>	-1670298	3317452	0.6301	-292573	88308	<b>0.0129</b>	0.88
<b>cyanobacteria</b>	-89381	21170	<b>&lt; 0.001</b>	-15158842	3837892	<b>0.0055</b>	292986	102161	<b>0.0241</b>	0.71
<b>heterotrophic bacteria</b>	-400294	190690	0.074	2294026	34569763	0.9489	-169496	920218	0.8591	0.67
<b>MF:bacterivores</b>	0.003989	0.00529	0.4755	-1.718371	0.959058	0.1163	0.039456	0.025529	0.1661	0.68
<b>MF:pigmented protists</b>	0.00658	0.001988	<b>0.0129</b>	2.048623	0.360364	<b>&lt; 0.001</b>	-0.012378	0.009593	0.2379	0.90
<b>C:P (molar)</b>	-0.1684	0.1272	0.2272	-26.7425	23.0576	0.2842	1.86	0.6138	<b>0.0191</b>	0.67
<b>C:N (molar)</b>	0.22688	0.06288	<b>0.0087</b>	-5.86872	11.39921	0.62252	-0.34796	0.30344	0.2892	0.80
<b>N:P (molar)</b>	-0.05714	0.0128	<b>0.0029</b>	-0.2612	2.32059	0.91354	0.17829	0.06177	<b>0.0234</b>	0.83

	P-limitation									
	light			dilution			light*dilution			R <sup>2</sup>
	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p	
<b>mixotroph</b>	148897	45894	<b>0.0142</b>	-10864649	8319935	0.2329	78815	221470	0.7324	0.86
<b>heterotroph</b>	2070	1765	0.2793	1458597	319959	<b>0.0026</b>	-29788	8517	<b>0.01</b>	0.79
<b>autotroph</b>	157712	43439	<b>0.0084</b>	-2781037	7874964	0.7343	-443025	209625	0.0724	0.79
<b>cyanobacteria</b>	-20760	7789	<b>0.0322</b>	-3029191	1412114	0.0691	57148	37589	0.1722	0.47
<b>heterotrophic bacteria</b>	-19898	89264	0.83	36106243	16182420	0.0609	-839846	430762	0.0922	0.67
<b>MF:bacterivores</b>	-0.004579	0.003143	0.1885	-2.474775	0.596774	<b>0.0034</b>	0.052144	0.015167	<b>0.0109</b>	0.75
<b>MF:pigmented protists</b>	-0.003313	0.00175	0.1	0.69043	0.317321	0.066	0.01193	0.008447	0.201	0.82
<b>C:P (molar)</b>	4.897	1.305	<b>0.0072</b>	28.829	236.586	0.9064	-8.872	6.298	0.2017	0.78
<b>C:N (molar)</b>	0.01918	0.02009	0.3715	-2.99308	3.64287	0.4384	0.19105	0.09697	0.0895	0.77
<b>N:P (molar)</b>	0.5387	0.1295	<b>0.0042</b>	7.6902	23.476	0.7528	-1.2655	0.6249	0.0825	0.79