

Guislain, A., Beisner, B. E. and Köhler, J. 2018. Variation in species light acquisition traits under fluctuating light regimes: implications for non-equilibrium coexistence. – Oikos doi: 10.1111/oik.05297

Appendix 1

Table A1. Species composition of the isolated Lake TaiHu phytoplankton community during the experiment. *Chloro*: Chlorophyceae; *Bacill*: Bacillariophyceae; *Cyano*: Cyanophyceae; *Zygn*: Zygnematophyceae.

Class	Species
Chloro	<i>Actinastrum hantzschii</i>
-	<i>Coelastrum astroideum</i>
-	<i>Coelastrum microporum</i>
-	<i>Crucigenia fenestrata</i>
-	<i>Crucigenia quadrata</i>
-	<i>Crucigeniella apiculata</i>
-	<i>Didymocystis spec.</i>
-	<i>Elakatothrix spec.</i>
-	<i>Eudorina spec.</i>
-	<i>Lagerheimia ciliata</i>
-	<i>Lagerheimia wratislavensis</i>
-	<i>Micractinium pusillum</i>
-	<i>Monoraphidium arcuatum</i>
-	<i>Monoraphidium contortum</i>
-	<i>Monoraphidium griffithii</i>
-	<i>Oosystis spp.</i>
-	<i>Pediastrum boryanum</i>
-	<i>Pediastrum duplex</i>
-	<i>Pediastrum simplex</i>
-	<i>Pediastrum tetras</i>
-	<i>Planktonema (Binuk.) lauterbornii</i>
-	<i>Planktosphaeria gelatinosa</i>
-	<i>Raphidocelis spec.</i>
-	<i>Scenedesmus acuminatus</i>
-	<i>Scenedesmus bijuga</i>
-	<i>Scenedesmus communis</i>
-	<i>Scenedesmus falcatus</i>
-	<i>Scenedesmus intermedius</i>
-	<i>Scenedesmus maximus</i>
-	<i>Scenedesmus sempervirens</i>
-	<i>Scenedesmus serratus</i>
-	<i>Scenedesmus subspicatus</i>
-	<i>Scenedesmus spp</i>
-	<i>Schroederia indica</i>
-	<i>Schroederia setigera</i>
-	<i>Schroederia spec.</i>
-	<i>Tetraedron caudatum</i>
-	<i>Tetraedron minimum</i>
Bacill	<i>Aulacoseira granulata</i>
-	<i>Aulacoseira spp.</i>
-	<i>Cyclotella pseudostelligera</i>
-	<i>Nitzschia acicularis</i>
-	<i>Nitzschia fonticola</i>
-	<i>Nitzschia spp.</i>
Cyano	<i>Anabaena flos-aquae</i>
-	<i>Anabaena spec., gerade</i>
-	<i>Aphanizomenon issatschenkoi</i>
-	<i>Chroococcus turgidus</i>
-	<i>Geitlerinema unsure</i>
-	<i>Limnothrix spec.</i>
-	<i>Merismopedia spec</i>
-	<i>Microcystis spec.</i>
-	<i>Oscillatoria spp.</i>
-	<i>Planktothrix spp</i>
-	<i>Raphidiopsis curvata</i>
-	<i>Raphidiopsis spec.</i>
Zygn	<i>Closterium acutum v. variabile</i>

Table A2. Daily photosynthetically active radiation ($E\ m^{-2}\ d^{-1}$) received by each treatment over the whole experiment period. Daily PAR exposure was corrected for shade, light attenuation of the lake, transmittance of the incubation bottles and vertical motion of moved algae.

	surface	0 - 0.5m		0 - 1m		0 - 1.8m	
		Fixed	Moved	Fixed	Moved	Fixed	Moved
7 Sept	3.00	1.42	1.65	0.53	1.12	0.03	0.93
8 Sept	7.19	4.02	4.19	1.86	2.91	0.18	2.25
9 Sept	10.23	4.67	5.58	1.64	3.78	0.07	2.91
10 Sept	1.65	0.88	0.94	0.38	0.65	0.03	0.50
11 Sept	1.68	0.74	0.91	0.25	0.61	0.01	0.47
13 Sept	12.58	6.78	7.22	2.97	4.99	0.57	3.90
14 Sept	1.36	0.48	0.57	0.17	0.39	0.02	0.31
15 Sept	2.78	1.39	1.55	0.55	1.06	0.09	0.81
16 Sept	2.58	1.68	1.82	0.71	1.25	0.13	0.99
Average	4.78	2.45	2.71	1.01	1.86	0.13	1.45

Table A3. Averaged relative contributions of the main phytoplankton groups to the total biovolume under constant and fluctuating light across the entire experimental period.

	Constant light			Fluctuating light		
	Cyanobacteria	Diatoms	Chlorophyceae	Cyanobacteria	Diatoms	Chlorophyceae
Minimal contribution	0.10	0.38	0	0.14	0.55	0
Maximal contribution	0.46	0.90	0.21	0.43	0.85	0.04
Mean \pm Standard deviation	0.27 \pm 0.11	0.69 \pm 0.14	0.04 \pm 0.05	0.25 \pm 0.09	0.73 \pm 0.1	0.02 \pm 0.01

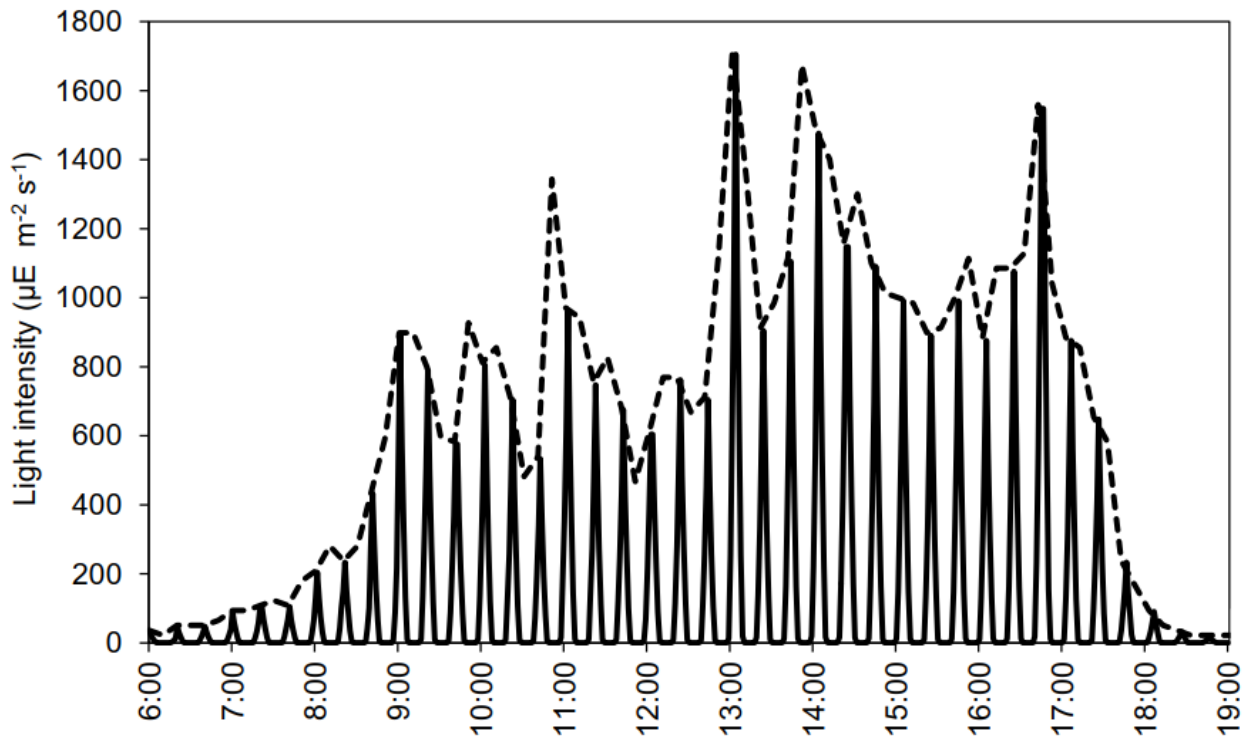


Figure A1. Example of diurnal course of light intensity at the water surface (dotted line) and experienced by phytoplankton under complete water column mixing (0–1.8 m) (full line) for the two extreme light supply treatments taken at the Lake station, 7 September 2016 (attenuation coefficient = 4.97 m^{-1}). Phytoplankton received $3 \text{ E m}^{-2} \text{ day}^{-1}$ (100% PAR relative) at the surface versus $0.93 \text{ E m}^{-2} \text{ day}^{-1}$ (30.9% PAR relative) for the case of full over-turn.

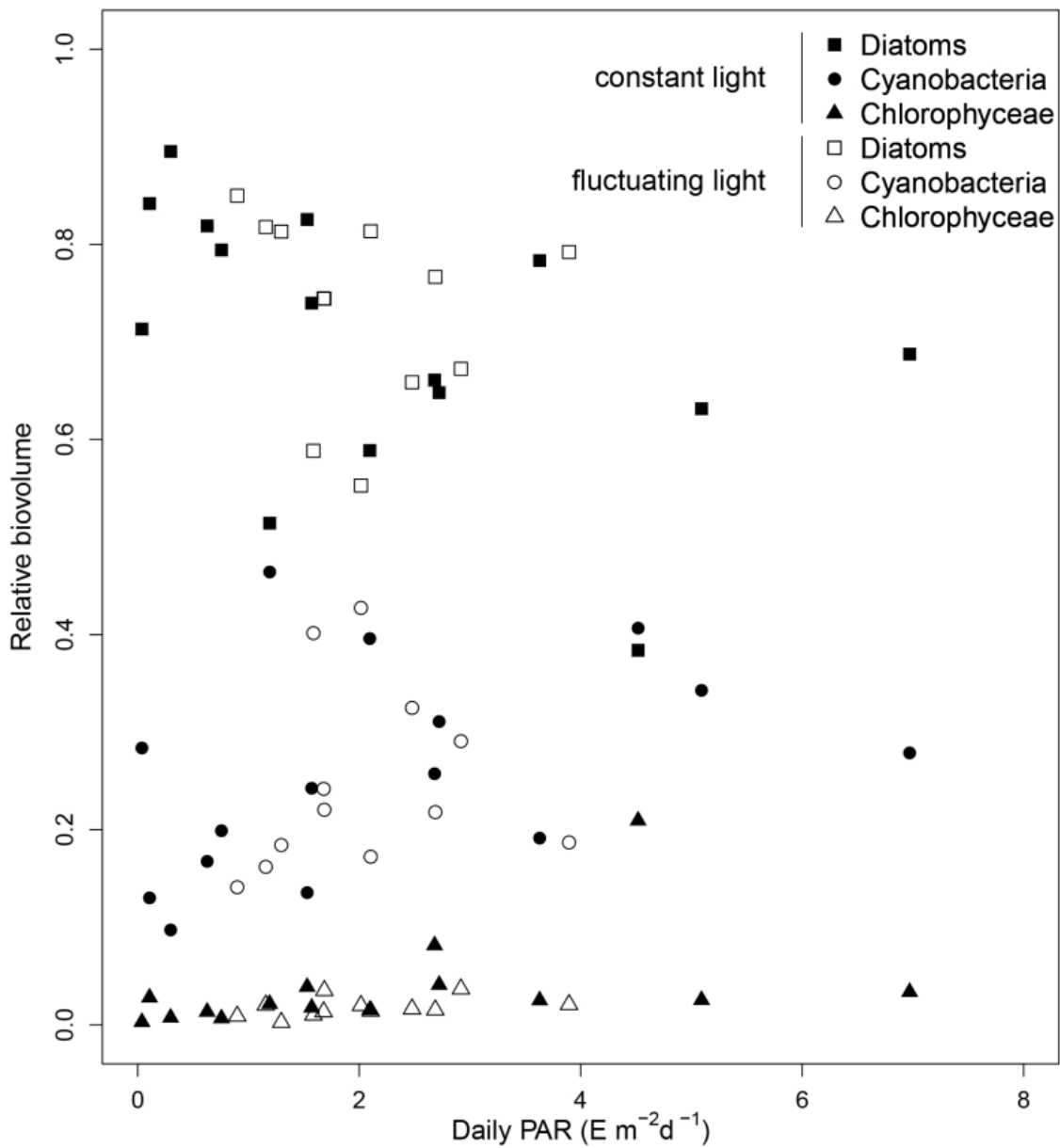


Figure A2. Light-dependency of the relative biovolumes of diatoms, cyanobacteria and chlorophyceae to the total biovolume, under fluctuating (open symbols) and constant light (closed symbols). Averages over [day 0 – day 1] and [day 2 – end experiment] represented the relative contributions at day 2 and at the end of the experiment respectively.

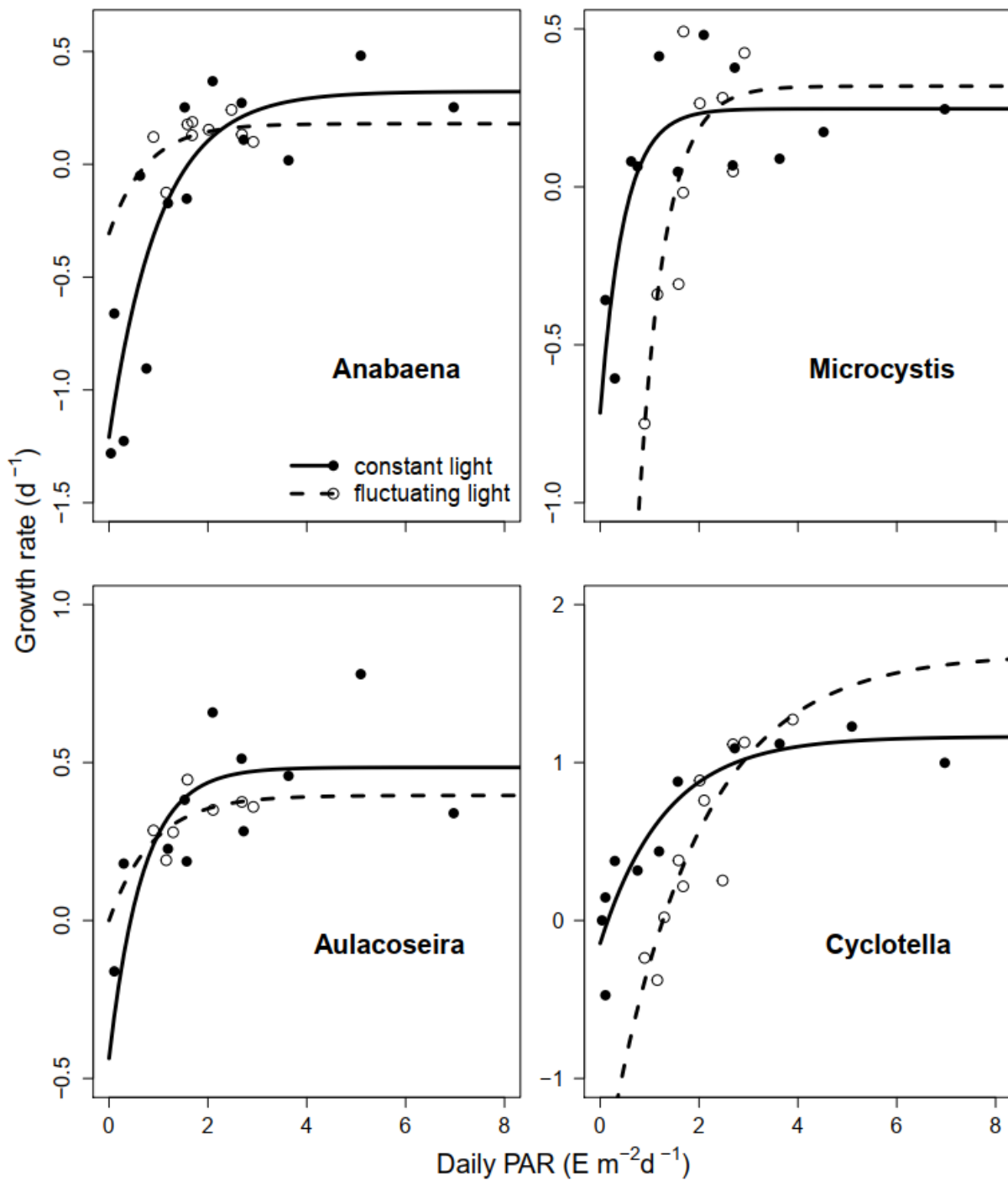


Figure A3. Species-specific growth-light relationships of *Anabaena flos-aquae*, *Microcystis* spp., *Aulacoseira granulata* and *Cyclotella pseudostelligera* under fluctuating and constant light.