

Supplement of Biogeosciences, 13, 6625–6635, 2016
<http://www.biogeosciences.net/13/6625/2016/>
doi:10.5194/bg-13-6625-2016-supplement
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Supplement of

Effect of ocean acidification on the structure and fatty acid composition of a natural plankton community in the Baltic Sea

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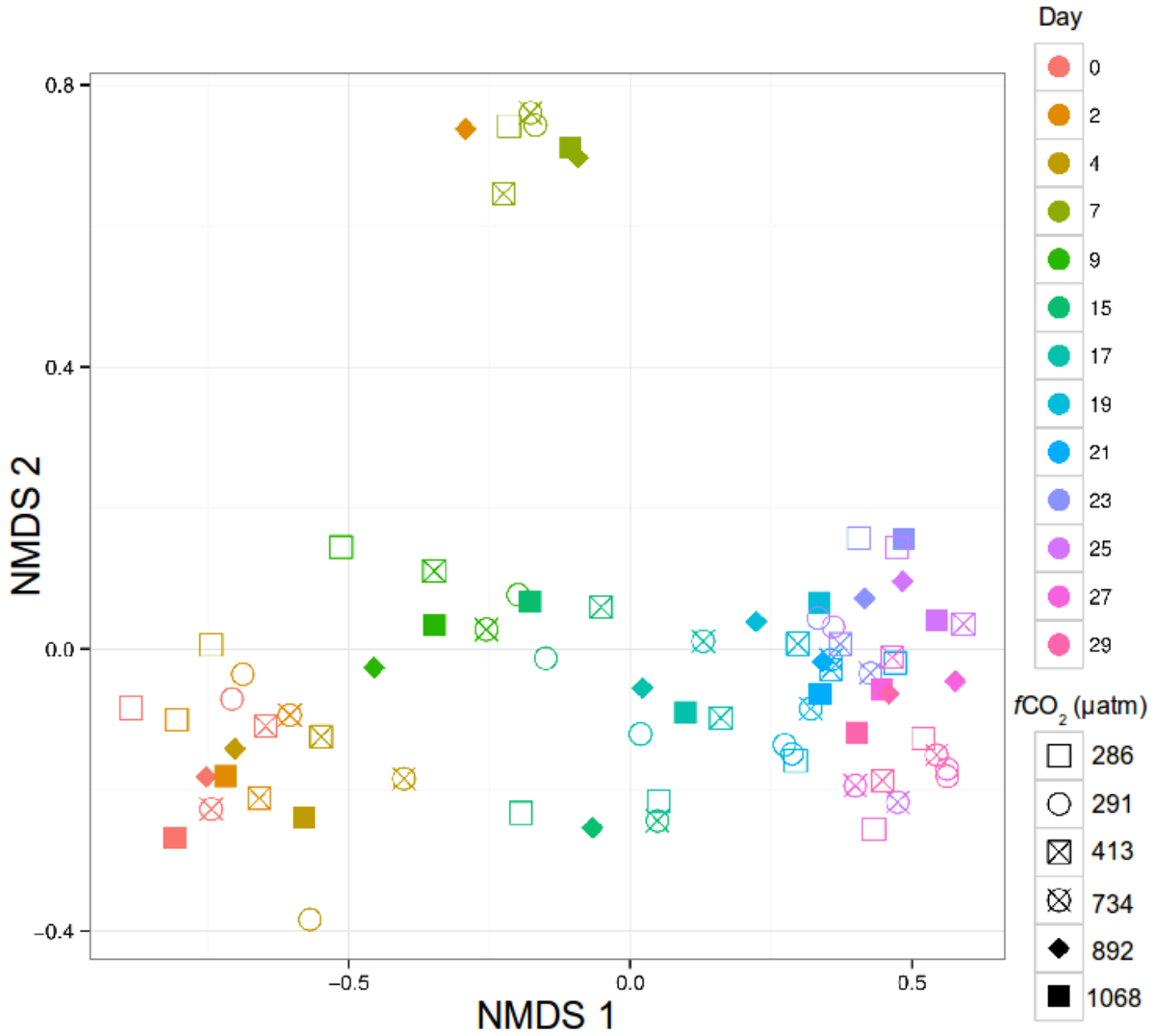


Figure S1. Non Metrical Multidimensional Scaling (NMDS) of the plankton community composition in terms of calculated biomass change through sampling days and CO₂ treatment. The NMDS 1 axis show that the phytoplankton communities diverge through time while the NMDS 2 axis show that the communities do not differ with CO₂ treatment levels.

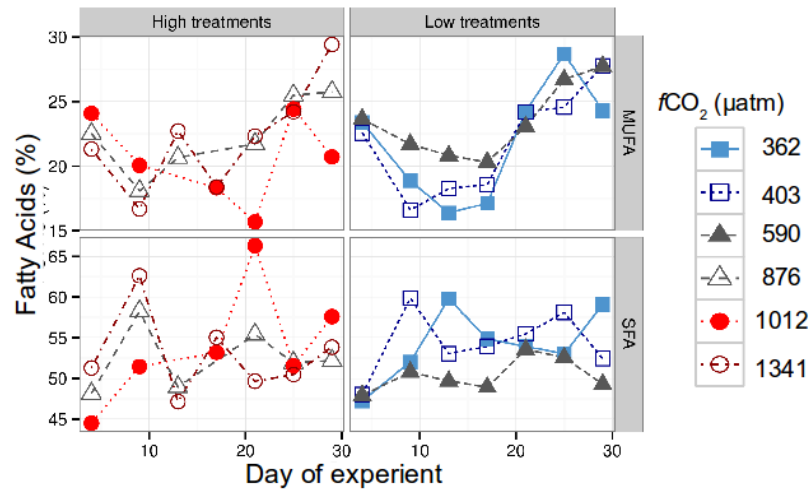


Figure S2. Relative seston MUFA and SFA content over experimental duration across the CO₂ treatments. The MUFA and SFA of all CO₂ treatments showed an increase, although the relation of both with time is weak (Linear regression, R²= 0.12, t= 2.88, p= 0.005 and R²= 0.15, t= 3.26, p= 0.001 respectively).

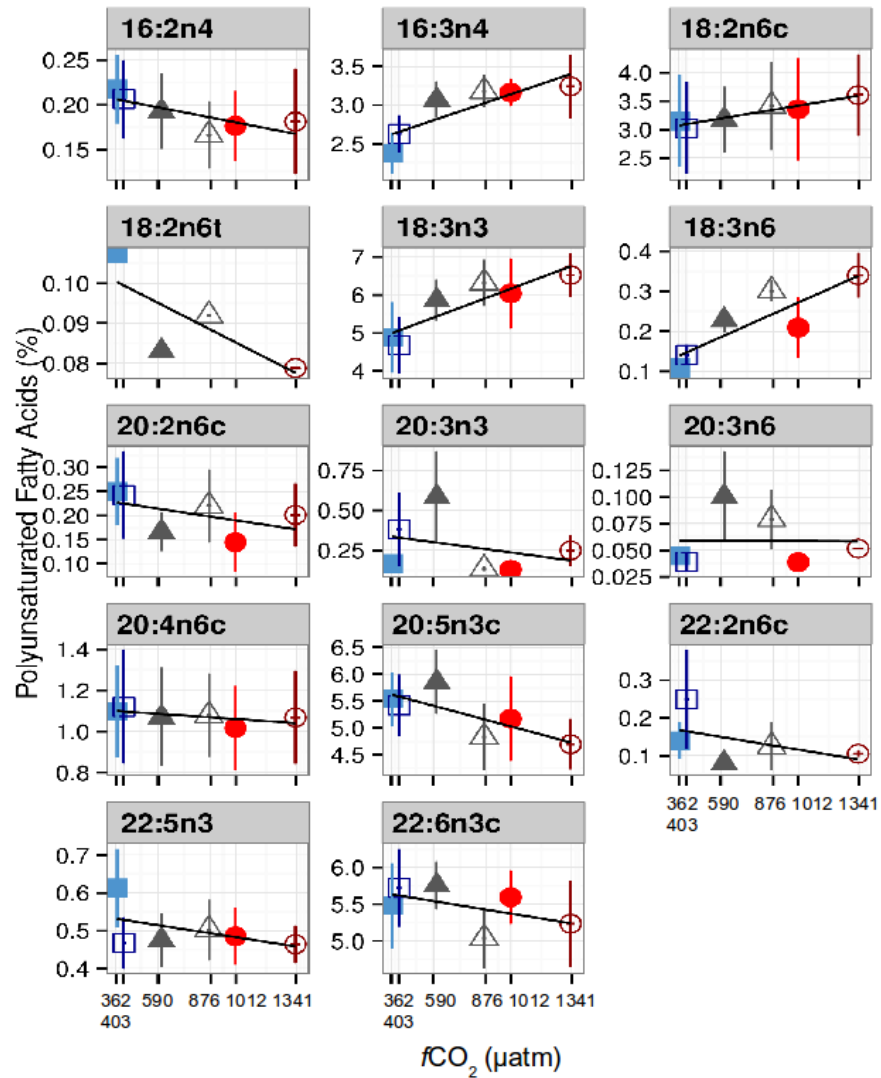


Figure S3. Relative polyunsaturated fatty acids (PUFA) content in the seston under the $f\text{CO}_2$ gradient treatments. The x-axis show the mean $f\text{CO}_2$ measured during the sampling period, bars shows standard error. The 18:2n6c showed a significant correlation with CO_2 and Si (LME, $F_{22}=80.1$, $p<0.0001$ and $F_{22}=272.76$, $p<0.0001$, respectively); 16:3n4 with CO_2 , P and Si ($F_{23}=24.10$, $p<0.0001$; $F_{23}=9.67$, $p<0.0049$ and $F_{23}=27.94$, $p<0.0001$, respectively); and 18:3n6 with CO_2 and N ($F_3=12.20$, $p=0.039$ and $F_{23}=8.86$, $p<0.05$).

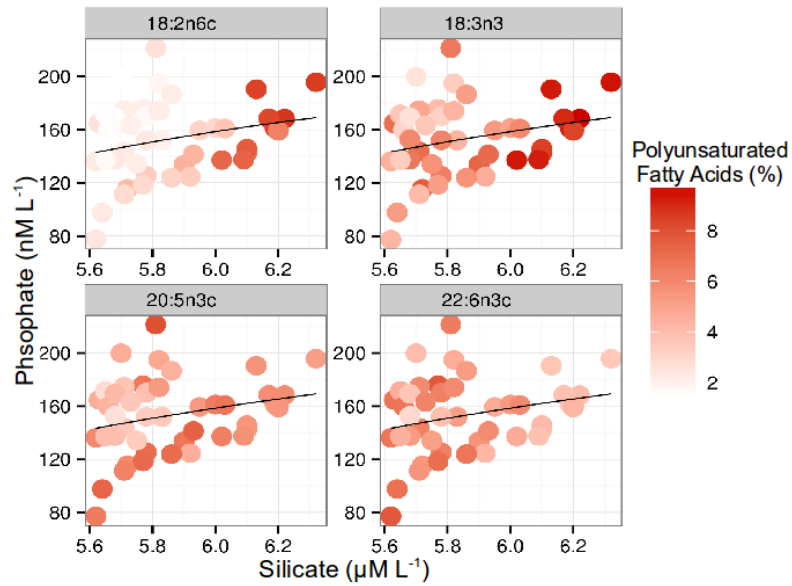


Figure S4. Relation between different sestonic PUFA content with silicate and phosphate abundance in the mesocosms. The 18:2n6c and 18:3n3 showed a positive effect of Silicate (MEM, $F= 272.7$, $p<0.0001$ and $F= 104.9$, $p<0.0001$ respectively), while 20:5n3c and 22:6n3c showed a significant silicate and phosphate effect (MEM, for phosphate $F=5.3$, $p=0.03$ and $F=6.2$, $p=0.02$; for silicate, $F=7.5$, $p=0.01$ and $F=16.1$, $p<0.01$, respectively).

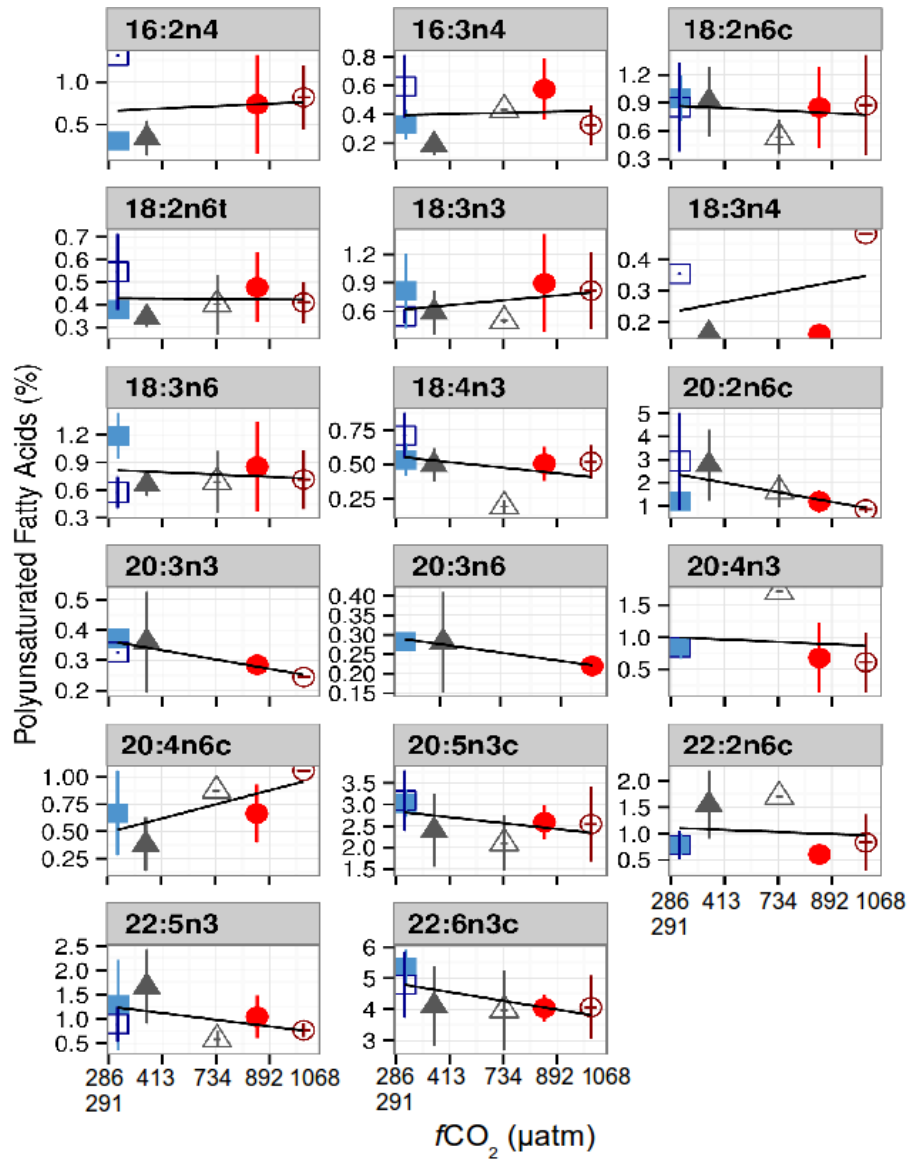


Figure S5. Relative content of the different polyunsaturated fatty acids (PUFA) in the copepods *Acartia bifilosa* under the $f\text{CO}_2$ gradient treatments. The x-axis show the mean $f\text{CO}_2$ measured during the sampling period, bars shows standard error.

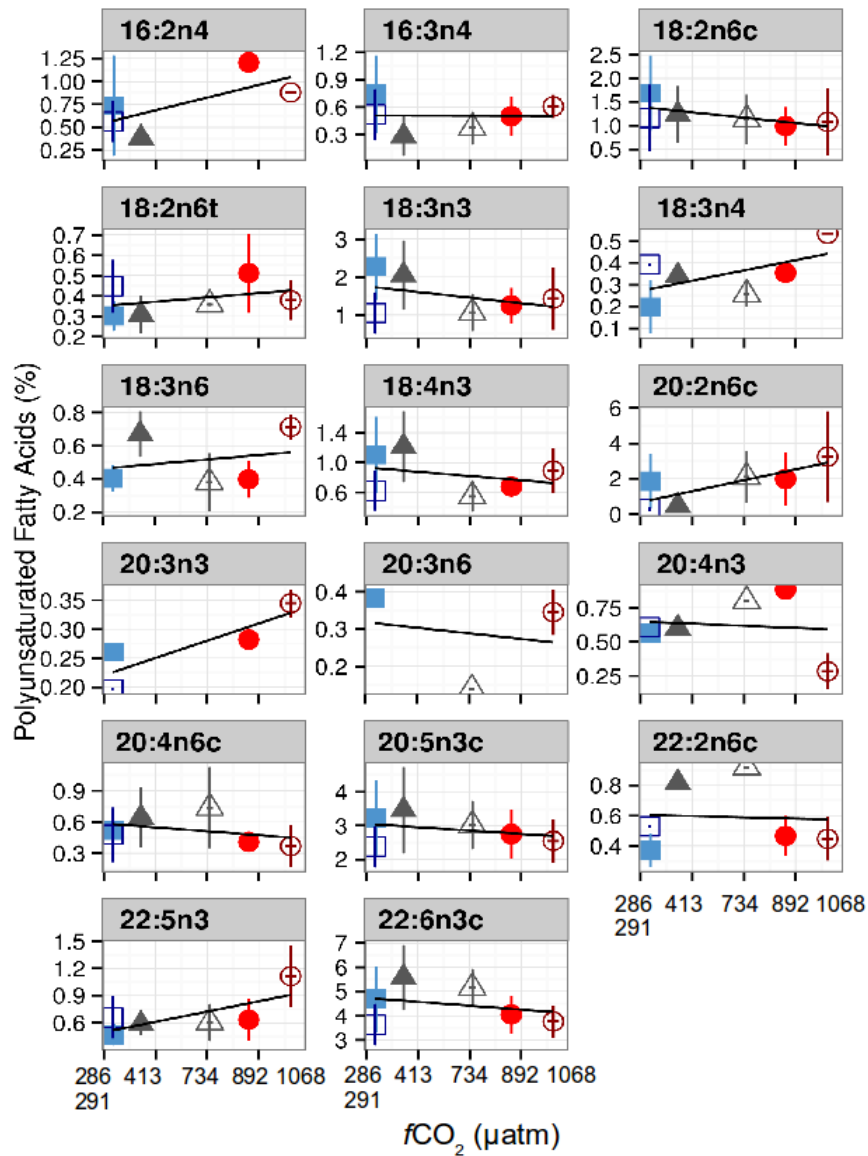


Figure S6. Relative content of the different polyunsaturated fatty acids (PUFA) in the copepod *Eurytemora affinis* under the $f\text{CO}_2$ gradient treatments. The x-axis show the mean $f\text{CO}_2$ measured during the sampling period, bars shows standard error.

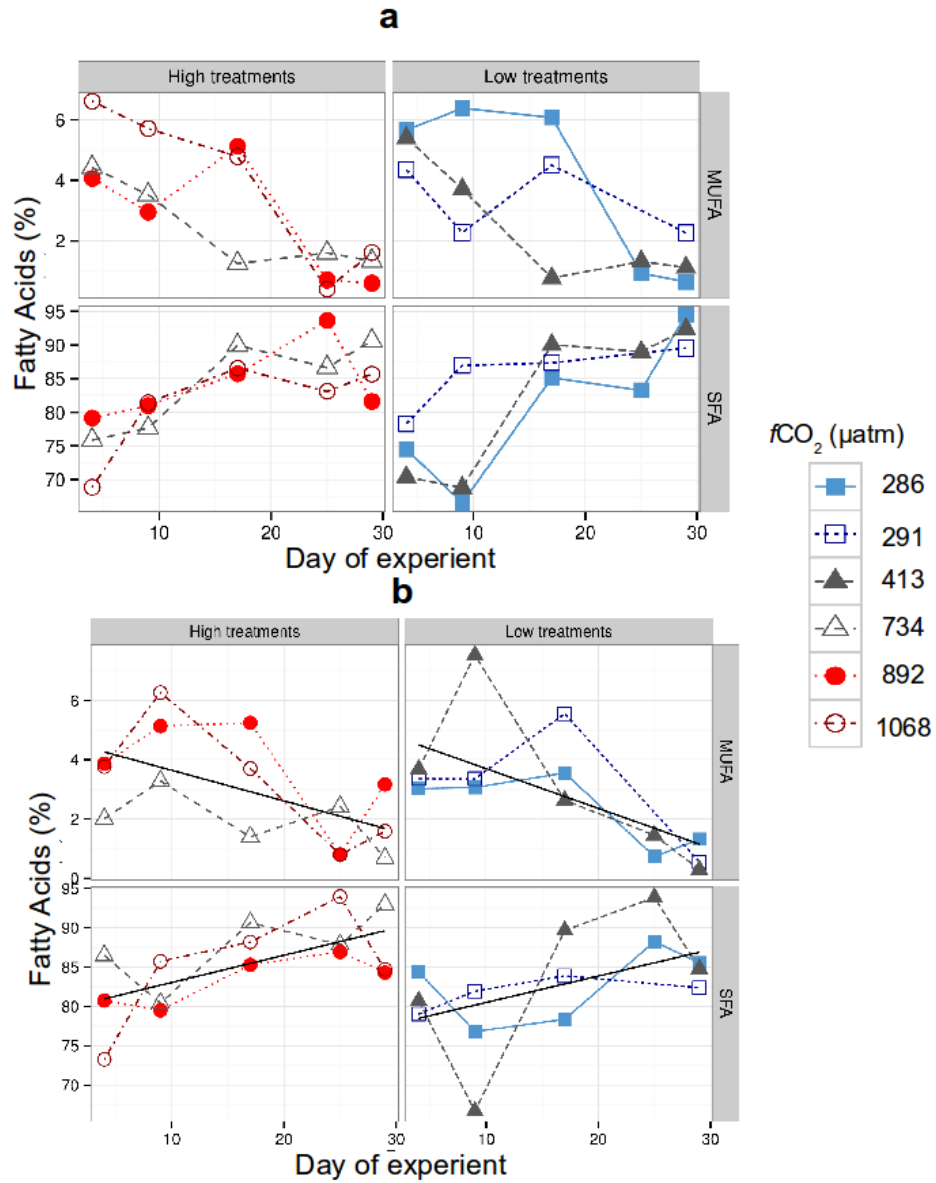


Figure S7. Relative MUFA and SFA content of the copepod (a) *Acartia biflosa* and (b) *Eurytemora affinis* across the CO₂ treatments. The MUFA and SFA of all CO₂ treatments showed a significant increase over time.

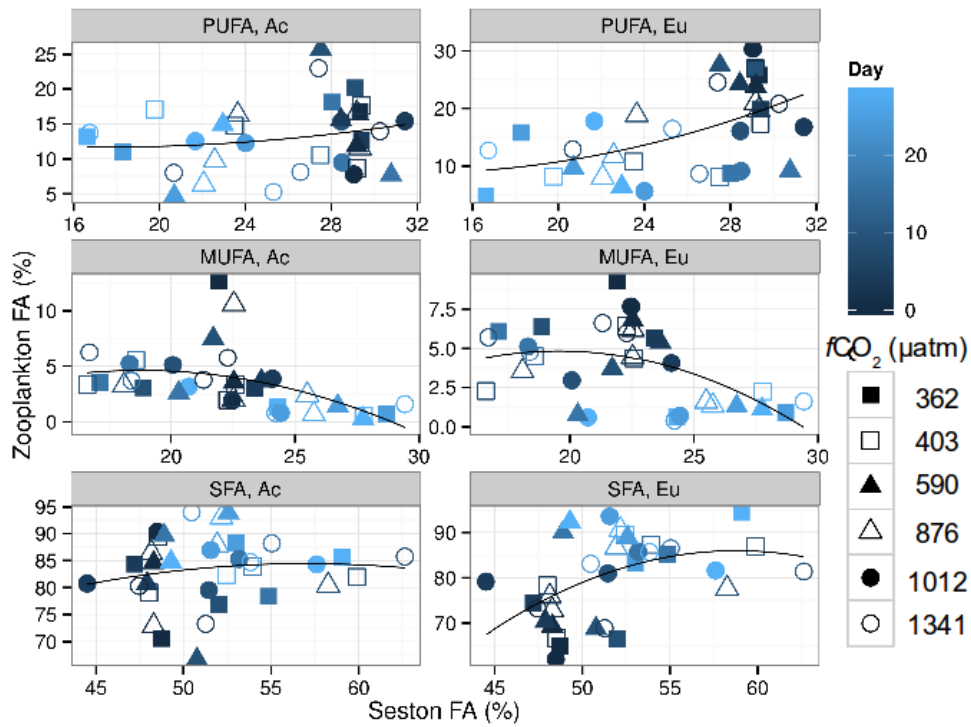


Figure S8. Relative PUFA, MUFA and SFA content of the copepods *Acartia bifilosa* (Ac) and *Eurytemora affinis* (Eu) in relation to the respective seston FA across the CO_2 treatments. (Linear regression, *E. affinis*: $R^2= 0.18$, $t= 2.818$, $p= 0.008$, PUFA; $R^2= 0.10$, $t= -2.37$, $p= 0.02$, MUFA; $R^2= 0.16$, $t= 2.91$, $p= 0.005$, SFA; *A. bifilosa*: $p= 0.2$ PUFA; $R^2= 0.18$, $t= -2.97$, $p= 0.005$, MUFA; $p= 0.5$, SFA)