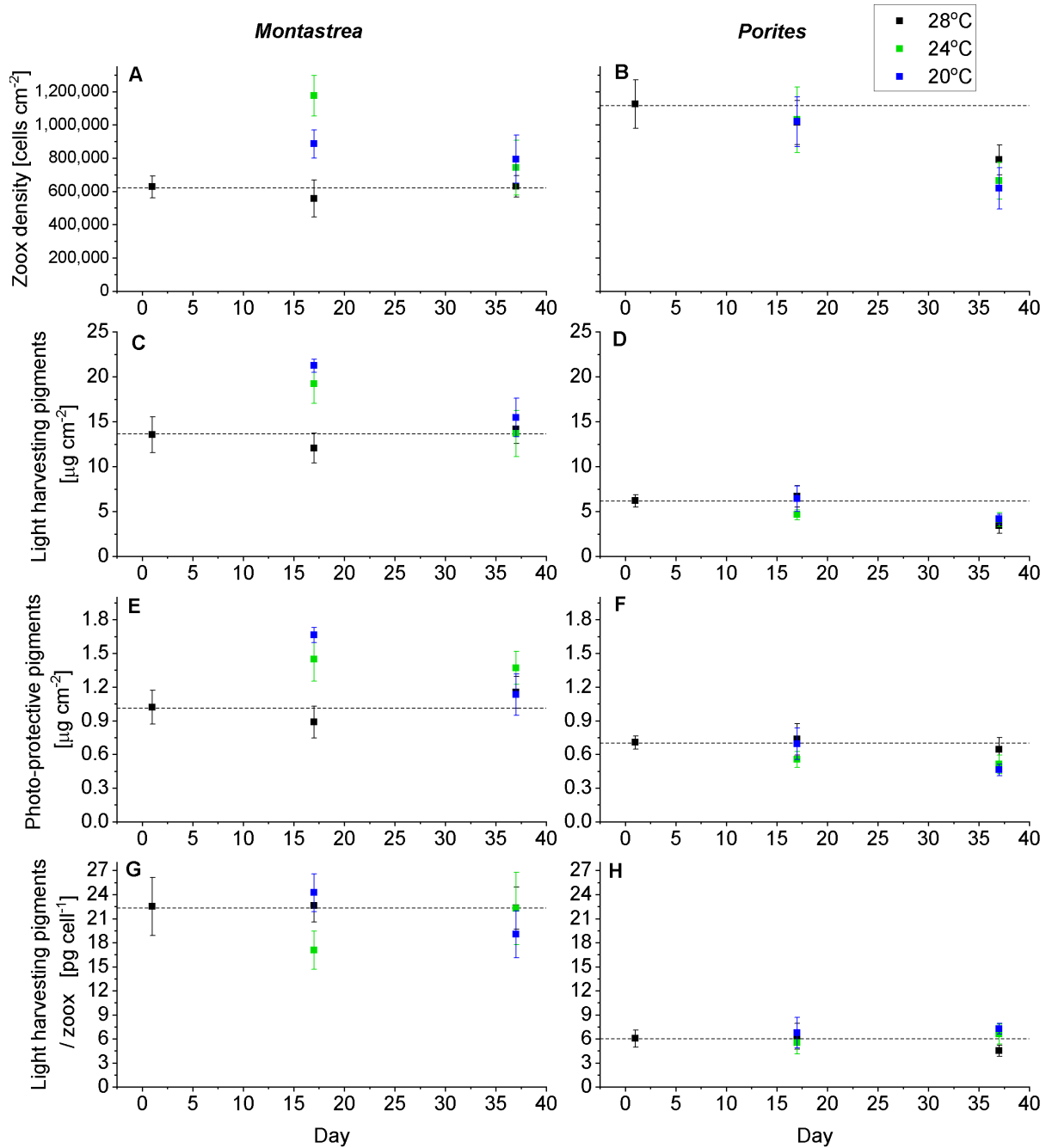
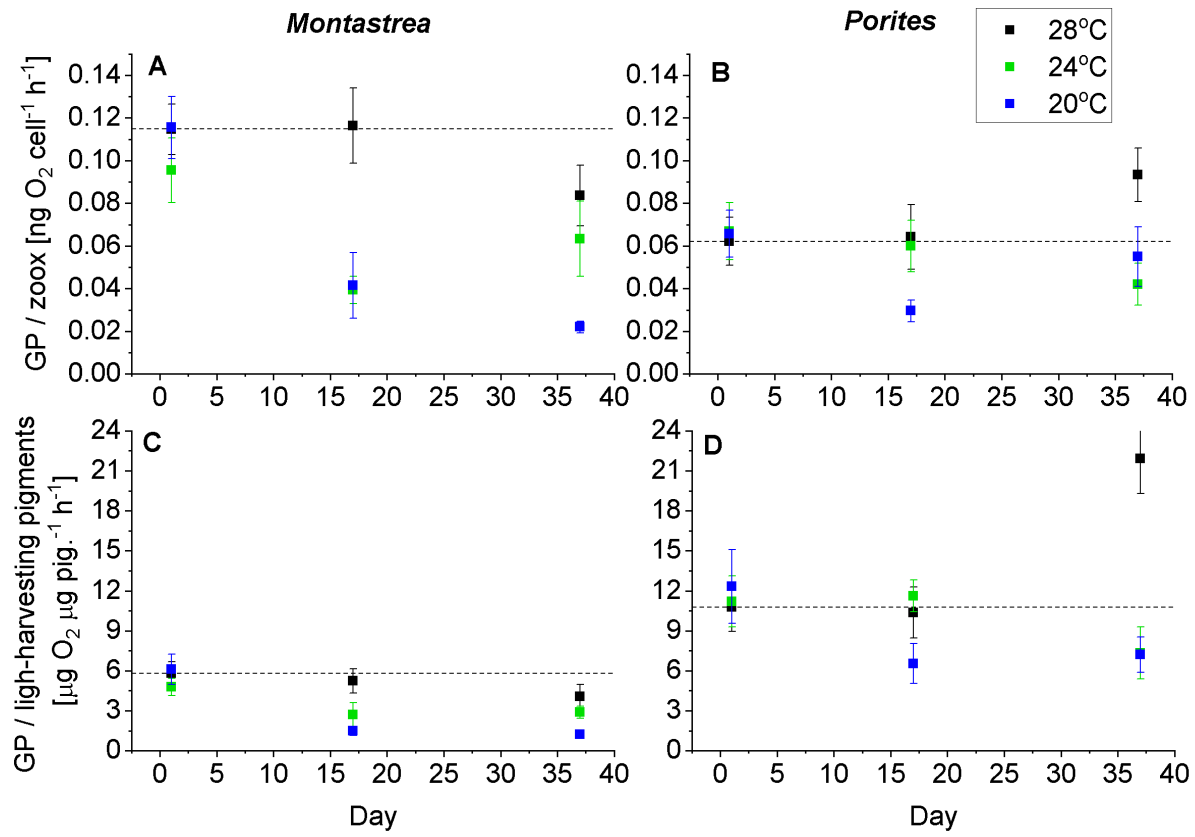


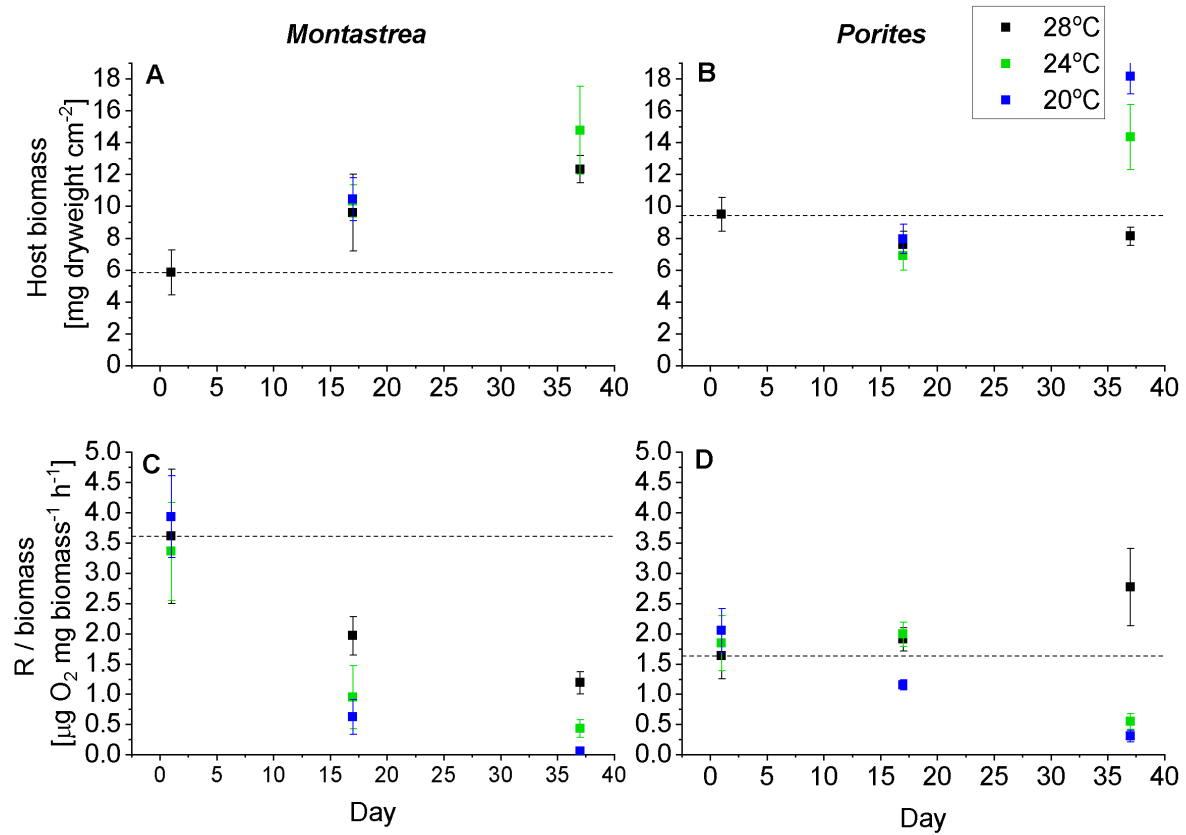
**Fig. S1.** Metabolic rates measured through-out the course of the experiment. **A + B)** Gross photosynthesis (GP), **C + D)** Respiration (R) and **E + F)** GP/R ratio of *Montastrea cavernosa* and *Porites astreoides*. Mean  $\pm$  standard error. Dashed line serves as a reference line at the value measured in the control treatment on day 1 (28°C).



**Fig. S2.** Zooxanthellae tissue metrics measured throughout the course of the experiment. **A + B)** Zooxanthellae density (Zoox density), **C + D)** Concentration of light harvesting pigments including chlorophyll-a, chlorophyll-c and peridinin, **E + F)** Concentration of photo-protective pigments including diadinoxanthin and diatoxanthin, and **G + H)** Concentration of light-harvesting pigments per zooxanthellae cell of *Montastrea cavernosa* and *Porites astreoides*. Mean  $\pm$  standard error. Dashed line serves as a reference line at the value measured in the control treatment on day 1 (28°C).



**Fig. S3.** Gross photosynthesis rates (GP) standardized to zooxanthellae metrics measured throughout the course of the experiment. **A + B**) GP per zooxanthellae cell, and **C + D**) GP per amount of light harvesting pigments, latter including chlorophyll-a, chlorophyll-c and peridinin, of *Montastrea cavernosa* and *Porites astreoides*. Mean  $\pm$  standard error. Dashed line serves as a reference line at the value measured in the control treatment on day 1 (28°C).



**Fig. S4.** **A + B)** Coral host biomass measured as tissue dry weight and **C + D)** Respiration rate (R) per amount of total coral biomass (host + zooxanthellae) of *Montastrea cavernosa* and *Porites astreoides*. Mean  $\pm$  standard error. Dashed line serves as a reference line at the value measured in the control treatment on day 1 (28°C).

**Table S1.** GLMM results of the random effects including coral replicate (Rep) and replicate treatment aquarium (Tank). Standard deviation (Std.Dev.)

Response variable	Random effects	<i>Montastrea</i>			<i>Porites</i>		
		poly	Variance	Std.Dev.	poly	Variance	Std.Dev.
Gross photosynthesis (GP)	Rep:Tank	1	0.013	0.112	2	0.025	0.159
	Residual		0.100	0.316		0.183	0.428
Respiration (R)	Rep:Tank		0.031	0.176		0.046	0.215
	Residual	1	0.357	0.598	2	0.356	0.597
GP/R	Rep:Tank		0.021	0.144		0.021	0.145
	Residual		0.365	0.604		0.252	0.503
Zooxanthellae (zoox) density	Rep:Tank	1	0.000	0.000	1	0.015	0.121
	Residual		0.040	0.201		0.069	0.263
Light-harvesting (LH) pigments	Rep:Tank		0.002	0.045		0.016	0.127
	Residual	2	0.058	0.241	1	0.090	0.300
Photo-protective pigments	Rep:Tank		0.017	0.131		0.007	0.083
	Residual		0.074	0.273		0.093	0.305
LH pigment/zoox	Rep:Tank	2	0.002	0.046	1	411.300	20.280
	Residual		0.064	0.253		1524.500	39.050
GP/zoox	Rep:Tank		0.001	0.036		0.030	0.174
	Residual	2	0.195	0.441	1	0.121	0.347
GP/LH pigments	Rep:Tank		0.015	0.122		0.025	0.159
	Residual		0.193	0.440		0.096	0.310
Host biomass	Rep:Tank	2	0.007	0.083	1	0.006	0.076
	Residual		0.026	0.162		0.019	0.137
R/biomass	Rep:Tank		0.115	0.339		0.025	0.159
	Residual	2	0.243	0.493	1	0.204	0.451