

Supplementary table S1. The prior distributions for the net photosynthesis – temperature model. Note that the parameter H_d is estimated through the relation, $H_a = \eta H_d$.

Parameter	Distribution	Location	Scale	Lower bound
y_{max}	Gaussian	5	5	0
x_{opt}	Gaussian	291	5	273
H_a	Gaussian	30	30	0
E_a	Gaussian	30	30	0
η	Gaussian	25	70	1
R_{20}	Gaussian	4	5	0

Supplementary table S2. The mean and 95% credible intervals (95% CI) of the expected value estimated from the $\Delta F/F_m'$ – temperature model in a red alga, *Chondria armata* from Kagoshima, Japan exposed at 4, 8, 12, 16, 20, 24, 28, 32, 36, and 40°C for 1, 2, and 3 days at 50 $\mu\text{mol photons m}^{-2} \text{s}^{-1}$ (12L:12D photoperiod).

Temperature °C	1-day		2-day		3-day	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
4	0.00	0.00 – 0.00	0.00	0.00 – 0.00	0.00	0.00 – 0.00
8	0.01	0.00 – 0.01	0.00	0.00 – 0.00	0.00	0.00 – 0.00
12	0.14	0.12 – 0.16	0.11	0.09 – 0.13	0.08	0.06 – 0.10
16	0.38	0.35 – 0.40	0.39	0.36 – 0.41	0.40	0.37 – 0.43
20	0.52	0.49 – 0.54	0.52	0.51 – 0.54	0.50	0.47 – 0.53
24	0.55	0.52 – 0.57	0.54	0.52 – 0.56	0.53	0.50 – 0.56
28	0.54	0.51 – 0.56	0.52	0.50 – 0.54	0.56	0.54 – 0.59
32	0.50	0.48 – 0.53	0.46	0.44 – 0.48	0.40	0.36 – 0.43
36	0.41	0.34 – 0.47	0.30	0.24 – 0.34	0.03	0.01 – 0.05
40	0.02	0.00 – 0.06	0.01	0.00 – 0.03	0.00	0.00 – 0.00