Table S1. ANOVA results for a linear mixed effects model testing the effects of temperature treatment (ambient temperature or elevated temperature), pH treatment (ambient pH or low pH), duration of exposure (days in experiment), the interaction of pH and temperature, and the interaction of pH and exposure duration on the Perkins Eye Index development rate of lobster eggs. The duration of exposure (in days) was scaled such that the intercept was the mean number of days of exposure. Tank and female lobster identity were included as random effects.

	Sum Sq	df	F value	P value
pH	1	19	0.12	0.73
Temperature	1	19	0.25	0.63
Duration of exposure	194	232	69.20	**<0.01**
*pH * Temperature*	14	19	5.14	**0.04**
*pH * Duration of exposure*	18	232	6.40	**0.01**
*Temperature * Duration of exposure*	2	232	0.89	0.35
*pH * Temperature * Duration of exposure*	14	232	4.92	**0.03**

Table S2. ANOVA results for a linear mixed effects model testing the effects of temperature treatment (ambient temperature or elevated temperature), pH treatment (ambient pH or low pH), and duration of exposure (days in experiment) on total protein content of American lobster eggs. The duration of exposure (in days) was scaled such that the intercept was the mean number of days of exposure. Tank and female lobster identity were included as random effects.

	Sum Sq	df	F value	P value
pH	32	20	0.02	0.90
Temperature	380	20	0.21	0.66
Duration of exposure	30005	294	16.19	**<0.01**
*pH * Temperature*	1577	20	0.85	0.37
*pH * Duration of exposure*	1224	294	0.66	0.42
*Temperature * Duration of exposure*	5614	294	3.03	0.08
*pH * Temperature * Duration of exposure*	7	294	0.01	0.95

Table S3. ANOVA results for a linear mixed effects model testing the effects of temperature treatment (ambient temperature or elevated temperature), pH treatment (ambient pH or low pH) and duration of exposure (days in experiment) on the surface area of yolk in photographs of lobster eggs. The duration of exposure (in days) was scaled such that the intercept was the mean number of days of exposure. Tank and female lobster identity were included as random effects.

	Sum Sq	df	F value	P value
pH	0.010	29	0.49	0.49
Temperature	0.090	29	4.34	**0.05**
Duration of exposure	0.271	220	13.04	**<0.01**
Duration of exposure ^{2}	0.008	220	0.38	0.54
*pH * Temperature*	0.005	29	0.24	0.63
*pH * Duration of exposure*	0.009	220	0.43	0.51
*Temperature * Duration of exposure*	0.007	220	0.32	0.57
*pH * Duration of exposure* ^{2}	0.008	220	0.37	0.55
*Temperature * Duration of exposure* ^{2}	0.019	220	0.91	0.34
*Duration of exposure * Duration of exposure* ^{2}	0.011	220	0.52	0.47
*pH * Temperature * Duration of exposure*	0.031	220	1.49	0.22
*pH * Temperature * Duration of exposure* ^{2}	0.003	220	0.16	0.69
*pH * Duration of exposure * Duration of exposure* ^{2}	0.006	220	0.28	0.60
*Temperature * Duration of exposure * Duration of exposure* ^{2}	0.003	220	0.13	0.72
*pH * Temperature * Duration of exposure * Duration of exposure* ^{2}	0.003	220	0.13	0.72

Table S4. ANOVA results for a linear mixed effects model testing the effects of temperature treatment (ambient temperature or elevated temperature), pH treatment (ambient pH or low pH) and duration of exposure (days in experiment) on the average heartbeats per minute for eggs. The duration of exposure (in days) was scaled such that the intercept was the mean number of days of exposure. Tank and female lobster identity were included as random effects.

	Sum Sq	df	F value	P value
pH	3069	145	3.45	0.07
Temperature	9277	145	10.43	**<0.01**
Duration of exposure	1545	145	1.74	0.19
*pH * Temperature*	14	145	0.02	0.90
*pH * Duration of exposure*	17	145	0.02	0.89
*Temperature * Duration of exposure*	423	145	0.48	0.49
*pH * Temperature * Duration of exposure*	119	145	0.13	0.71

Table S5. ANOVA results for a linear mixed effects model testing the effects of temperature treatment (ambient temperature or elevated temperature), pH treatment (ambient pH or low pH) and duration of exposure (days in experiment) on the average Na^+/K^+-ATPase activity as measured as the rate of ouabain sensitive phosphate release (umol P_i ug $protein^{-1}$ hr^{-1}) of American lobster eggs. The duration of exposure (in days) was scaled such that the intercept was the mean number of days of exposure and a polynomial data term was included as a predictor. Tank and female lobster identity were included as random effects.

	Sum Sq	df	F value	P value
pH	1.9	105	2.78	0.10
Temperature	3.02	105	4.43	**0.04**
Duration of exposure	0.57	209	0.84	0.36
Duration of exposure ^{2}	4.22	210	6.19	**0.01**
*pH * Temperature*	1.44	105	2.11	0.15
*pH * Duration of exposure*	0.15	209	0.22	0.64
*Temperature * Duration of exposure*	3.01	209	4.41	**0.04**
*pH * Duration of exposure* ^{2}	0.73	210	1.07	0.30
*Temperature * Duration of exposure* ^{2}	0.83	210	1.22	0.27
*Duration of exposure * Duration of exposure* ^{2}	0.56	211	0.82	0.37
*pH * Temperature * Duration of exposure*	0.42	209	0.62	0.43
*pH * Temperature * Duration of exposure* ^{2}	1.31	210	1.92	0.17
*pH * Duration of exposure * Duration of exposure* ^{2}	0	211	0.01	0.94
*Temperature * Duration of exposure * Duration of exposure* ^{2}	3.14	211	4.61	**0.03**
*pH * Temperature * Duration of exposure * Duration of exposure* ^{2}	0.05	211	0.07	0.80

Table S6. ANOVA results for a linear mixed effects model testing the effects of temperature treatment (ambient temperature or elevated temperature), pH treatment (ambient pH or low pH) and duration of exposure (days in experiment) on the average oxygen consumption per ug of total protein of eggs. The duration of exposure (in days) was scaled such that the intercept was the mean number of days of exposure and a polynomial data term was included as a predictor. Tank and female lobster identity were included as random effects.

	Sum Sq	df	F value	P value
pH	0.03	64	0.00	0.97
Temperature	72.16	64	3.95	0.05
Duration of exposure	231.56	197	12.69	**<0.01**
Duration of exposure ^{2}	305.25	200	16.73	**<0.01**
*pH * Temperature*	0.04	64	0.00	0.96
*pH * Duration of exposure*	2.24	197	0.12	0.73
*Temperature * Duration of exposure*	7.37	197	0.40	0.53
*pH * Duration of exposure* ^{2}	1.16	200	0.06	0.80
*Temperature * Duration of exposure* ^{2}	5.41	200	0.30	0.59
*Duration of exposure * Duration of exposure* ^{2}	195.69	200	10.72	**<0.01**
*pH * Temperature * Duration of exposure*	28.54	197	1.56	0.21
*pH * Temperature * Duration of exposure* ^{2}	2.54	200	0.14	0.71
*pH * Duration of exposure * Duration of exposure* ^{2}	0.90	200	0.05	0.82
*Temperature * Duration of exposure * Duration of exposure* ^{2}	0.00	200	0.00	0.99
*pH * Temperature * Duration of exposure * Duration of exposure* ^{2}	4.34	200	0.24	0.63

Table S7. Characterization of larval hatching from ovigerous females that released larvae during the experiment. Metrics included the duration of release, the total quantity of larvae released, and the average daily quantity of larvae released.

Lobster	Temperature Treatment	pH Treatment	Source Population	# of Days of Larval Release	Total Larvae Released	Average Larvae Released Day^{-1}
1	Ambient	Ambient	Maine	20	1782	89
2	Ambient	Ambient	Massachusetts	26	2286	88
3	Ambient	Ambient	Maine	19	1144	60
4	Ambient	Ambient	Massachusetts	15	1069	71
5	Ambient	Low	Maine	15	575	38
6	Ambient	Low	Massachusetts	2	4	2
7	Ambient	Low	Maine	18	1208	67
8	Ambient	Low	Massachusetts	19	628	33
9	Elevated	Ambient	Massachusetts	4	61	15
10	Elevated	Ambient	Maine	18	1389	77
11	Elevated	Ambient	Massachusetts	20	1031	52
12	Elevated	Low	Massachusetts	18	1905	106
13	Elevated	Low	Maine	6	48	8
14	Elevated	Low	Massachusetts	16	68	4

Table S8. ANOVA results for a linear mixed effects model testing the effects of temperature treatment (ambient temperature or elevated temperature) and pH treatment (ambient pH or low pH) on the hatching carapace length (mm). Tank and female lobster identity were included as random effects.

	Sum Sq	*df*	*F value*	*P value*
pH	0.003	9	0.24	0.64
Temperature	0.053	9	4.75	**0.05**
*pH * Temperature*	0.002	9	0.16	0.70