Table S1. Analysis of Deviance for a GLM fitted model for hatch time of *Menidia menidia* larvae in the seven treatment diurnal acidification and hypoxia experiment.

	LR Chisq	df	Pr(>Chisq)
Dissolved Oxygen	25.5781	2	2.791e^{-06}*
pH	3.3224	2	0.1899
pH:Dissolved Oxygen	23.8492	2	6.625e^{-06}*

Table S2. Two-way ANOVA results for hatch success (arcsin transformed) of *Menidia menidia* larvae in the seven treatment diurnal acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
pH	2	0.0677	0.0338	0.721	0.498
Dissolved Oxygen	2	2.7674	1.3837	29.491	7.98e^{-7}*
pH:Dissolved Oxygen	2	0.0019	0.0009	0.020	0.980
Residuals	21	0.9853	0.0469		

Table S3. Two-way ANOVA results for survival (normalized to # fish hatched per vessel, arcsin transformed) of *Menidia menidia* larvae in the seven treatment diurnal acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
pH	2	0.6125	0.30626	4.646	0.0213*
Dissolved Oxygen	2	0.4047	0.20234	3.070	0.0677
pH:Dissolved Oxygen	2	0.0900	0.04498	0.682	0.5163
Residuals	21	1.3843	0.06592		

Table S4A-C. ANOVA analysis of Deviance for linear mixed effects model comparing model with (full) and without (null, pH, DO) treatment effects for length of *Menidia menidia* larvae in the seven treatment diurnal acidification and hypoxia experiment.

A	df	AIC	BIC	LogLik	Deviance	Chisq	Chi	Df	Pr(>Chisq)
Null model	3	339.47	348.25	−166.73	333.47				
Full model	8	339.21	362.63	−161.61	323.21	10.258		5	0.07

B	df	AIC	BIC	LogLik	Deviance	Chisq	Chi	Df	Pr(>Chisq)
pH model	5	339.79	354.43	−164.90	329.79				
Full model	8	339.21	362.63	−161.61	323.21	6.5807		3	0.09

C	df	AIC	BIC	LogLik	Deviance	Chisq	Chi	Df	Pr(>Chisq)
DO model	5	342.83	357.47	−166.42	332.83				
Full model	8	339.21	362.63	−161.61	323.21	9.62		3	0.022*

Table S5. Analysis of Deviance for a GLM fitted model for hatch time of *Cyprinodon variegatus* larvae in the seven treatment diurnal acidification and hypoxia experiment.

	LR Chisq	df	Pr(>Chisq)
Dissolved Oxygen	16.5432	2	0.0002557*
pH	7.7209	2	0.0210587*
pH:Dissolved Oxygen	14.5709	2	0.0006854*

Table S6. Two-way ANOVA results for hatch success (arcsin transformed) of *Cyprinodon variegatus* larvae in the seven treatment diurnal acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
pH	2	0.00088	0.000442	0.159	0.85377
Dissolved Oxygen	2	0.04530	0.022652	8.166	0.00238*
pH:Dissolved Oxygen	2	0.02242	0.011208	4.040	0.03277*
Residuals	21	0.05825	0.002774		

Table S7. Two-way ANOVA results for survival (normalized to # fish hatched per vessel, arcsin transformed) of *Cyprinodon variegatus* larvae in the seven treatment diurnal acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
pH	2	0.0054	0.00269	0.133	0.877
Dissolved Oxygen	2	0.0022	0.001105	0.054	0.947
pH:Dissolved Oxygen	2	0.0621	0.031074	1.532	0.239
Residuals	21	0.4259	0.020280		

Table S8A-C. ANOVA analysis of Deviance for linear mixed effects model comparing model with (full) and without (null, pH, DO) treatment effects for length of *Cyprinodon variegatus* larvae in the seven treatment diurnal acidification and hypoxia experiment.

A	df	AIC	BIC	LogLik	Deviance	Chisq	Chi	Df	Pr(>Chisq)
Null model	3	841.74	852.64	−417.87	835.74				
Full model	9	837.18	869.89	−409.59	819.18	16.555		6	0.011*

B	df	AIC	BIC	LogLik	Deviance	Chisq	Chi	Df	Pr(>Chisq)
pH model	5	840.93	859.10	−415.46	830.93				
Full model	9	837.18	869.89	−409.59	819.18	11.748		4	0.019*

C	df	AIC	BIC	LogLik	Deviance	Chisq	Chi	Df	Pr(>Chisq)
DO model	5	838.56	856.74	−414.28	828.56				
Full model	9	837.18	869.89	−409.59	819.18	9.3814		4	0.052

Table S9. Two-way ANOVA results for hatch time of *Menidia beryllina* larvae in the seven treatment diurnal acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
pH	2	51.75	25.875	9.880	0.00095*
Dissolved Oxygen	2	2.68	1.339	0.511	0.60695
pH:Dissolved Oxygen	2	24.00	12.000	4.582	0.02232*
Residuals	21	55.00	2.619		

Table S10. Two-way ANOVA results for hatch success (arcsin transformed) of *Menidia beryllina* larvae in the seven treatment diurnal acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
pH	2	0.0782	0.0391	1.149	0.336
Dissolved Oxygen	2	1.2173	0.6086	17.881	2.92e-5*
pH:Dissolved Oxygen	2	0.0435	0.0217	0.639	0.538
Residuals	21	0.7148	0.0340		

Table S11. Two-way ANOVA results for survival (normalized to # fish hatched per vessel, arcsin transformed) of *Menidia beryllina* larvae in the seven treatment diurnal acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
pH	2	0.0743	0.0372	0.498	0.615
Dissolved Oxygen	2	2.6032	1.3016	17.449	3.43e-5*
pH:Dissolved Oxygen	2	0.1003	0.0501	0.672	0.521
Residuals	21	1.5665	0.0746		

Table S12A-C. ANOVA analysis of Deviance for linear mixed effects model comparing model with (full) and without (null, pH, DO) treatment effects for length of *Menidia beryllina* larvae in the seven treatment diurnal acidification and hypoxia experiment.

A	df	AIC	BIC	LogLik	Deviance	Chisq	Chi	Df	Pr(>Chisq)
Null model	3	243.49	251.46	−118.75	237.49				
Full model	9	246.83	270.71	−114.41	228.83	8.6648		6	0.1933

B	df	AIC	BIC	LogLik	Deviance	Chisq	Chi	Df	Pr(>Chisq)
pH model	5	239.12	252.39	−114.56	229.12				
Full model	9	246.83	270.71	−114.41	228.83	0.2954		4	0.9901

C	df	AIC	BIC	LogLik	Deviance	Chisq	Chi	Df	Pr(>Chisq)
DO model	5	246.83	260.10	−118.42	236.83				
Full model	9	246.83	270.71	−114.41	228.83	8.0028		4	0.092

Table S13. One way Anova results for hatch time of *Menidia beryllina* larvae in the four treatment diurnal acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
Between groups	3	3.433	1.144	2.289	0.135
Residuals	11	5.500	0.500		

Table S14. One way Anova results for hatch success (arcsin transformed) of *Menidia beryllina* larvae in the four treatment diurnal acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
Between groups	3	0.6222	0.20740	16	0.000252*
Residuals	11	0.1425	0.01296		

Table S15. One way Anova results for survival (normalized to # fish hatched per vessel, arcsin transformed) of *Menidia beryllina* larvae in the four treatment diurnal acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
Between groups	3	0.2210	0.07368	4.069	0.0359*
Residuals	11	0.1992	0.01811		

Table S16. ANOVA analysis of Deviance for linear mixed effects model comparing model with (full) and without (null) treatment effects for length of *Menidia beryllina* larvae in the four-treatment diurnal acidification and hypoxia experiment.

	df	AIC	BIC	LogLik	Deviance	Chisq	Chi Df	Pr(>Chisq)
Null model	3	447.43	456.44	−220.72	441.43			
Full model	6	432.88	450.90	−210.44	420.88	20.555	3	0.0001*

Table S17. One way Anova results for hatch time of *Menidia beryllina* I larvae in the four treatment diurnal duration acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
Between groups	3	1.667	0.5556	2.222	0.163
Residuals	8	2.000	0.2500		

Table S18. One way Anova results for hatch success (arcsin transformed) of *Menidia beryllina* I larvae in the four treatment diurnal duration acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
Between groups	3	0.2107	0.07023	4.746	0.0347*
Residuals	8	0.1184	0.01480		

Table S19. One way Anova results for survival (normalized to # fish hatched per vessel, arcsin transformed) of *Menidia beryllina* I larvae in the four treatment diurnal duration acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
Between groups	3	0.2291	0.07636	5.111	0.0289*
Residuals	8	0.1195	0.01494		

Table S20. ANOVA analysis of Deviance for linear mixed effects model comparing model with (full) and without (null) treatment effects for length of *Menidia beryllina* I larvae in the four treatment diurnal duration acidification and hypoxia experiment.

	df	AIC	BIC	LogLik	Deviance	Chisq	Chi Df	Pr(>Chisq)
Null model	3	326.45	335.25	−160.22	320.45			
Full model	6	313.36	330.97	−150.68	301.36	19.084	3	0.0003*

Table S21. Analysis of Deviance for GLM fitted model for hatch time of *Menidia beryllina* II larvae in the four treatment diurnal duration acidification and hypoxia experiment.

	LR Chisq	Df	Pr(>Chisq)
Between groups	0.33904	3	0.9525

Table S22. One way Anova results for hatch success (arcsin transformed) of *Menidia beryllina* II larvae in the four treatment diurnal duration acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
Between groups	3	0.1574	0.05246	0.572	0.644
Residuals	12	1.1001	0.09167		

Table S23. One way Anova results for survival (normalized to # fish hatched per vessel, arcsin trasnformed) of *Menidia beryllina* II larvae in the four treatment diurnal duration acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
Between groups	3	0.4543	0.15143	6.506	0.00733**
Residuals	12	0.2793	0.02328		

Table S24. ANOVA analysis of Deviance for linear mixed effects model comparing model with (full) and without (null) treatment effects for length of *Menidia beryllina* II larvae in the four treatment diurnal duration acidification and hypoxia experiment.

	df	AIC	BIC	LogLik	Deviance	Chisq	Chi Df	Pr(>Chisq)
Null model	3	316.12	326.06	−155.06	310.12			
Full model	6	310.89	330.77	−149.44	298.89	11.231	3	0.011*

Table S25. Analysis of Deviance for GLM fitted model for hatch time of *Menidia menidia* larvae in the four treatment diurnal duration acidification and hypoxia experiment.

	LR Chisq	Df	Pr(>Chisq)
Between groups	4.5078	3	0.2116

Table S26. One way Anova results for hatch success (arcsin transformed) of *Menidia menidia* larvae in the four treatment diurnal acidification duration and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
Between groups	3	0.2295	0.07649	2.031	0.163
Residuals	12	0.4520	0.03766		

Table S27. One way Anova results for survival (normalized to # fish hatched per vessel, arcsin transformed) of *Menidia menidia* larvae in the four treatment diurnal duration acidification and hypoxia experiment.

	df	Sum Sq	Mean Sq	F value	Pr(>F)
Between groups	3	0.3380	0.1293	7.067	0.00543**
Residuals	12	0.2196	0.0183		

Table S28. ANOVA analysis of Deviance for linear mixed effects model comparing model with (full) and without (null) treatment effects for length of *Menidia menidia* larvae in the four treatment diurnal duration acidification and hypoxia experiment.

	df	AIC	BIC	LogLik	Deviance	Chisq	Chi Df	Pr(>Chisq)
Null model	3	164.38	172.10	−79.188	158.38			
Full model	6	155.00	170.44	−71.498	143.00	15.381	3	0.002*