Supporting Information

Title: Calcifying species sensitivity distributions for ocean acidification

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This supporting information is composed of four appendices. Appendix S1 shows the keyword used to complement the data collection with more recent literature. Appendix S2 shows the conversion from CO_2 partial pressure (pCO_2) to ocean pH. Appendix S3 describes the experimental design and pH_{50} and pH_{10} results of each logistic regression (Table S3.1), the literature list included by our study (Table S3.2), and the location of each experiment (Figure S3.1). Appendix S4 shows the result of the influence of temperature and experiment duration on pH_{50} results.

Appendix S1 Keyword search in Scopus in September 2014.

ABS((acidification* OR pH OR elevated pCO*) AND (ocean* OR marine*) AND (test* OR experiment* OR lab*) AND NOT ((marine sediment) OR (*surfactant OR oil) OR (DMS and DMSP))) AND (PUBYEAR > 2012)

Appendix S2 Conversion of CO_2 partial pressure to pH

When CO_2 partial pressure (pCO_2, μatm) for ocean water was reported instead of pH, we employed the following conversion equation (Figure S2.1). The conversion was done for 79 experiments (or 21 studies), Table S3.1.

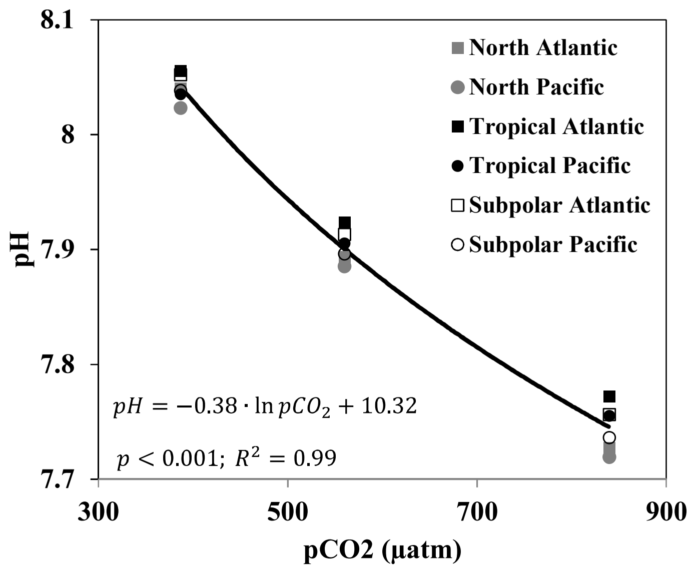


Figure S2.1 Correlation between pCO_2 and pH for different world's oceans based on the work of Feely et al.[1].

Appendix S3 Description of logistic regressions

Table S3.1 Duration and temperature, the pH range, number of samples, and the pH_{50} (95% confidence interval) and pH_{10} (derived according to equation 3, main text) of individual logistic regressions for **(a)** growth, **(b)** reproduction, and **(c)** survival of calcifying species. The underlying experimental data for the logistic regressions are listed in Table S3.2 and their locations are illustrated in Figure S3.1. pH_{10} was calculated when the logistic regression returned pH_{50} and β coefficients were significantly different from zero (otherwise, it is shown as not applicable, N/A).

	Logistic regression ID	**Duration (day)**	**Temperature (˚C)**	**pH range**	**Samples**	**pH_{50}**	**β**	**pH_{10}**
(a) Growth								
Annelida								
Hydroides crucigera	46	60	25	7.48 to 8.11	4	7.67£	-0.65£	N/A
Spirorbis spirorbis	190	30	16	7.33 to 8.11	3	No fit found		N/A
	192	30	16	7.33 to 8.11	3	7.21£	-0.63£	N/A
	193	30	16	7.33 to 8.11	3	7.60 (7.48 to 7.72)¥	-0.37 (-0.65 to -0.09)	7.95
Arthropoda								
Upogebia deltaura	83	35	0	7.35 to 7.99	3	1.71£	-0.06£	N/A
	84	35	0	7.35 to 7.99	3	7.77£	-0.17£	N/A
Bryozoa								
Celleporella hyalina	174	15	15	7.30 to 8.10	3	No fit found		N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
	175	15	19	7.30 to 8.10	3	7.30£	-0.46£	N/A
	176	15	22	7.30 to 8.10	3	7.19£	-0.07£	N/A
Electra pilosa	194	30	16	7.33 to 8.11	3	-17.06£	-3.83£	N/A
Myriapora truncata	188	45	18	7.43 to 8.06	3	7.49£	0.00£	N/A
	189	83	18	7.43 to 8.06	3	No fit found		N/A
Chlorophyta								
Halimeda cylindracea	332	35	28	7.40 to 8.10	4	No fit found		N/A
	333	35	30	7.40 to 8.10	4	7.85 (7.82 to 7.88)¥	-0.12 (-0.22 to -0.02)	7.97
	334	35	32	7.40 to 8.10	4	7.80£	-0.15£	N/A
	335	35	34	7.40 to 8.10	4	No fit found		N/A
Halimeda incrassata	45	60	25	7.49 to 8.19	4	7.82£	-0.15£	N/A
Halimeda macroloba	258	14	27	7.71 to 8.05	3	No fit found		N/A
	259	10	27	7.71 to 8.01	3	7.63£	-0.33£	N/A
	260	7	27	7.73 to 7.99	3	7.83£	-0.22£	N/A
	325	35	28	7.40 to 8.10	4	No fit found		N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
	329	35	30	7.40 to 8.10	4	7.38[£]	-0.53[£]	N/A
	330	35	32	7.40 to 8.10	4	No fit found		N/A
	331	35	34	7.40 to 8.10	4	7.64[£]	-0.23[£]	N/A
Halimeda vertebralis	326	35	30	7.40 to 8.10	4	No fit found		N/A
	327	35	32	7.40 to 8.10	4	7.78[£]	-0.16[£]	N/A
	328	35	34	7.40 to 8.10	4	No fit found		N/A
	336	35	28	7.40 to 8.10	4	7.76[£]	-0.39[£]	N/A
Cnidaria								
Acropora digitifera	219	7	29.3	7.54 to 8.11	3	7.19[£]	-0.02[£]	N/A
	220	7	29.3	7.57 to 8.16	3	4.03[£]	-0.71[£]	N/A
	221	14	29.3	7.54 to 8.09	3	No fit found		N/A
	222	14	29.3	7.63 to 8.15	3	6.89 (6.82 to 6.96)[¥]	-0.33 (-0.41 to -0.25)	7.21
	223	35	29.3	7.38 to 8.13	3	7.11 (7.10 to 7.12)[€]	-0.21 (-0.22 to -0.2)	7.31
	224	35	29.3	7.70 to 8.23	3	7.29[£]	-0.01[£]	N/A
Acropora intermedia	54	56	25.5	7.65 to	3	7.15[£]	-0.41[£]	N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
				8.20				
	57	56	28.5	7.65 to 8.20	3	6.94 (6.93 to 6.95)[¥]	-0.18 (-0.18 to -0.18)	7.11
	61	56	25.5	7.65 to 8.20	3	6.79[£]	-0.11[£]	N/A
	62	56	28.5	7.65 to 8.20	3	7.67 (7.58 to 7.75)[€]	-0.47 (-0.67 to -0.27)	8.11
	65	56	25.5	7.65 to 8.20	3	8.02[£]	-0.03[£]	N/A
	66	56	28.5	7.65 to 8.20	3	7.56 (7.54 to 7.58)[€]	-0.24 (-0.28 to -0.21)	7.79
Acropora millepora	195	11	26.5	7.83 to 8.07	3	5.55[£]	-1.51[£]	N/A
	203	23	26.5	7.81 to 8.04	3	8.03[£]	-0.08[£]	N/A
	204	23	29	7.81 to 8.04	3	No fit found		N/A
	206	11	29	7.81 to 8.04	3	6.62 (6.31 to 6.92)[¥]	-1.16 (-1.66 to -0.65)	7.72
	212	23	26.5	7.83 to 8.07	3	7.23[£]	-0.35[£]	N/A
	213	23	29	7.81 to 8.04	3	7.23[£]	-0.35[£]	N/A
Favia fragum	76	14	28.5	7.58 to 8.14[¤]	3	7.76 (7.60 to 7.91)[¥]	-0.36 (-0.65 to -0.07)	8.10

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
Lophelia pertusa	90	8	9	7.77 to 8.03[¤]	4	7.58[£]	-0.44[£]	N/A
	91	8	9	7.77 to 8.03[¤]	4	7.29[£]	-0.50[£]	N/A
	92	8	9	7.77 to 8.03[¤]	4	7.20[£]	-0.57[£]	N/A
	128	89	12.5	7.73 to 8.10[¤]	4	No fit found		N/A
	129	89	12.5	7.73 to 8.10[¤]	4	No fit found		N/A
	130	5	12.5	8.01 to 8.06[¤]	3	6.93[£]	-0.69[£]	N/A
Madrepora oculata	126	89	12.5	7.74 to 8.10[¤]	4	No fit found		N/A
	127	89	12.5	7.74 to 8.10[¤]	4	6.22[£]	-1.92[£]	N/A
	131	5	12.5	7.75 to 8.06[¤]	3	7.38[£]	-0.34[£]	N/A
Montipora monasteriata	205	23	26.5	7.81 to 8.04	3	7.64[£]	-0.28[£]	N/A
	207	23	29	7.81 to 8.04	3	6.98 (6.95 to 7.02)[¥]	-0.37 (-0.46 to -0.28)	7.33
	214	11	26.5	7.83 to 8.07	3	7.22[£]	-0.58[£]	N/A
	215	11	29	7.81 to 8.04	3	7.22[£]	-0.38[£]	N/A
	216	23	26.5	7.83 to 8.07	3	7.26[£]	-0.36[£]	N/A
	217	23	29	7.81 to	3	7.29[£]	-0.37[£]	N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
				8.04				
Oculina arbuscula	38	60	25	7.48 to 8.11	4	7.03 (6.74 to 7.33)¥	-0.81 (-1.47 to -0.15)	7.81
Pocillopora damicornis	196	11	29	7.81 to 8.04	3	7.61 (7.60 to 7.63)€	-0.3 (-0.33 to -0.26)	7.89
	197	23	26.5	7.83 to 8.07	3	7.31£	-0.46£	N/A
	198	23	29	7.81 to 8.04	3	7.48£	-0.41£	N/A
	208	23	26.5	7.81 to 8.04	3	7.04 (6.99 to 7.09)¥	-0.58 (-0.7 to -0.46)	7.59
	209	23	29	7.81 to 8.04	3	6.64£	-0.42£	N/A
	218	11	26.5	7.83 to 8.07	3	7.10£	-0.59£	N/A
	257	14	27	7.71 to 8.05	3	No fit found		N/A
	261	10	27	7.71 to 8.01	3	7.63£	-0.26£	N/A
	262	7	27	7.73 to 7.99	3	6.99£	-0.73£	N/A
	263	14	27	7.71 to 8.05	3	7.85 (7.84 to 7.86)€	-0.02 (-0.04 to 0)	7.87
	264	10	27	7.71 to 8.01	3	7.63£	-0.33£	N/A
	265	7	27	7.73 to	3	7.86£	-0.28£	N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
				7.99				
Porites astreoides	75	14	29.4	7.58 to 8.11[¤]	3	7.61 (7.43 to 7.79)[¥]	-0.46 (-0.79 to -0.12)	8.04
	93	49	26	7.72 to 7.99[¤]	3	7.85[£]	-0.29[£]	N/A
Porites australiensis	291	56	27	7.40 to 8.00	3	6.28[£]	-1.45[£]	N/A
	292	56	27	7.40 to 8.00	3	7.31[£]	-0.03[£]	N/A
	293	56	27	7.40 to 8.00	3	No fit found		N/A
	294	56	27	7.40 to 8.00	3	7.65[£]	-0.21[£]	N/A
	295	56	27	7.40 to 8.00	3	7.68[£]	-0.26[£]	N/A
	296	56	27	7.40 to 8.00	3	7.81[£]	-0.01[£]	N/A
Porites lobata	55	56	25.5	7.65 to 8.2	3	7.17[£]	-0.19[£]	N/A
	58	56	28.5	7.65 to 8.2	3	6.76[£]	-0.3[£]	N/A
	63	56	25.5	7.65 to 8.2	3	7.76 (7.70 to 7.82)[€]	-0.24 (-0.37 to -0.11)	7.99
	64	56	28.5	7.65 to 8.2	3	No fit found		N/A
Dinophyta								
Scrippsiella trochoidea	88	19	15	7.77 to 8.21[¤]	3	7.97[£]	-0.15[£]	N/A
	89	19	15	7.77 to 8.21[¤]	3	7.87[£]	-0.19[£]	N/A
Echinodermata								

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
Amphiura filiformis	1	40	14.5	6.80 to 8.00	4	4.95[£]	-2.10[£]	N/A
Arbacia punctulata	36	60	25	7.36 to 8.04	4	7.06 (6.92 to 7.20)[¥]	-0.78 (-1.1 to -0.46)	7.81
Asterias rubens	181	70	12.9	7.36 to 8.06[¤]	3	7.25[£]	-0.04[£]	N/A
Centrostephanus rodgersii	85	5	0	7.60 to 8.01	3	7.50[£]	-0.02[£]	N/A
Echinometra mathaei	12	3	24	7.13 to 8.11	5	7.82 (7.79 to 7.85)[¥]	-0.14 (-0.21 to -0.08)	7.96
Eucidaris tribuloides	44	60	25	7.36 to 8.04	4	7.20[£]	-0.73[£]	N/A
Heliocidaris erythrogramma	236	14	21	7.40 to 8.20	4	7.94[£]	-0.11[£]	N/A
	237	14	23	7.40 to 8.20	4	7.83[£]	-0.08[£]	N/A
	238	14	25	7.40 to 8.20	4	7.85[£]	-0.17[£]	N/A
	239	14	21	7.60 to 8.20	3	7.26[£]	-0.02[£]	N/A
	240	14	21	7.40 to 8.20	3	No fit found		N/A
	241	14	23	7.40 to 8.20	3	6.31[£]	-2.58[£]	N/A
Hemicentrotus pulcherrimus	14	3	14	7.02 to 7.98	5	6.26 (6.07 to 6.46)[¥]	-0.30 (-0.54 to -0.07)	6.55
Paracentrotus lividus	136	3	12.5	7.00 to	6	7.54	-0.30	7.83

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
				8.10		(7.43 to 7.65)[¥]	(-0.52 to -0.07)	
	137	3	12.5	7.00 to 8.10	6	7.63[£]	-0.31[£]	N/A
	138	3	12.5	7.00 to 8.10	6	7.57[£]	-0.36[£]	N/A
	139	3	12.5	7.00 to 8.10	6	7.73 (7.69 to 7.78)[€]	-0.23 (-0.32 to -0.14)	7.95
Strongylocentrotus droebachiensis	86	29	9	6.50 to 8.01	25	7.56[£]	-0.29[£]	N/A
Strongylocentrotus purpuratus	140	6	15.5	7.52 to 8.06[¤]	3	6.92[£]	-0.71[£]	N/A
	141	6	15.5	7.52 to 8.06[¤]	3	No fit found		N/A
	142	6	15.5	7.52 to 8.06[¤]	3	7.44[£]	-0.26[£]	N/A
	143	6	15.5	7.52 to 8.06[¤]	3	7.01 (6.94 to 7.07)[€]	-0.31 (-0.45 to -0.18)	7.31
	144	6	15.5	7.52 to 8.06[¤]	3	7.02 (6.97 to 7.06)[€]	-0.18 (-0.28 to -0.07)	7.19
	145	6	15.5	7.52 to 8.06[¤]	3	7.74[£]	-0.03[£]	N/A
	146	6	15.5	7.52 to 8.06[¤]	3	7.76[£]	-0.01[£]	N/A
	147	6	15.5	7.52 to 8.06[¤]	3	7.97[£]	-0.01[£]	N/A
	244	3	15.6	7.52 to	3	6.42[£]	-2.46[£]	N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
				8.06				
	245	6	15.6	7.52 to 8.06	3	6.84£	-0.42£	N/A
	246	3	15.6	7.52 to 8.06	3	6.97 (6.96 to 6.98)¥	-0.07 (-0.08 to -0.06)	7.03
	247	6	15.6	7.52 to 8.06	3	5.67£	-1.05£	N/A
	248	3	15.6	7.52 to 8.06	3	6.60£	-0.97£	N/A
	249	6	15.6	7.52 to 8.06	3	7.31 (7.3 to 7.32)€	-0.05 (-0.08 to -0.01)	7.35
	250	3	15.6	7.52 to 8.06	3	No fit found		N/A
	251	6	15.6	7.52 to 8.06	3	No fit found		N/A
Foraminifera								
Amphisorus hemprichii	95	84	27.5	7.76 to 8.17¤	5	7.49£	-0.52£	N/A
	96	84	27.5	7.76 to 8.17¤	5	7.6£	-0.38£	N/A
	97	84	27.5	7.76 to 8.17¤	5	7.9£	0.00£	N/A
	105	84	27.5	7.76 to 8.17¤	5	7.58£	-0.01£	N/A
Amphistegina radiata	233	40	27	7.58 to 8.10	4	7.82£	-0.14£	N/A
Baculogypsina sphaerulata	94	84	27.5	7.76 to 8.17¤	5	7.55£	-0.02£	N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
	98	84	27.5	7.76 to 8.17[¤]	5	7.64 (7.63 to 7.65)[¥]	-0.04 (-0.08 to 0.00)	7.68
	99	84	27.5	7.76 to 8.17[¤]	5	7.63[£]	-0.02[£]	N/A
	100	84	27.5	7.76 to 8.17[¤]	5	7.90[£]	-0.02[£]	N/A
Calcarina gaudichaudii	101	84	27.5	7.76 to 8.17[¤]	5	7.57[£]	-0.01[£]	N/A
	102	84	27.5	7.76 to 8.17[¤]	5	7.57[£]	-0.01[£]	N/A
	103	84	27.5	7.76 to 8.17[¤]	5	7.49[£]	-0.03[£]	N/A
	104	84	27.5	7.76 to 8.17[¤]	5	7.62[£]	0.00[£]	N/A
Heterostegina depressa	234	40	27	7.58 to 8.10	4	7.76 (7.74 to 7.78)[¥]	-0.12 (-0.16 to -0.08)	7.87
Marginopora vertebralis	235	40	27	7.58 to 8.10	4	7.76[£]	-0.23[£]	N/A
Haptophyta								
Emiliania huxleyi	2	not clear	19	7.79 to 8.15	5	7.72 (7.66 to 7.78)[¥]	-0.20 (-0.31 to -0.09)	7.91
	73	57	13	7.75 to 8.18	3	7.92[£]	-0.23[£]	N/A
	74	57	18	7.75 to 8.18	3	8.01[£]	-0.02[£]	N/A
	297	320	not clear	7.40 to 8.04[¤]	3	No fit found		N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH$_{50}$	β	pH$_{10}$
	298	320	not clear	7.40 to 8.04[¤]	3	7.67[£]	-0.27[£]	N/A
Heterokontophyta								
Turbinaria reniformis	199	11	26.5	7.83 to 8.07	3	7.41[£]	-0.01[£]	N/A
	200	11	29	7.81 to 8.04	3	No fit found		N/A
	201	23	26.5	7.83 to 8.07	3	No fit found		N/A
	202	23	29	7.81 to 8.04	3	No fit found		N/A
	210	23	26.5	7.81 to 8.04	3	6.70[£]	-0.67[£]	N/A
	211	23	29	7.81 to 8.04	3	7.13[£]	-0.44[£]	N/A
Mollusca								
Argonauta nodosa	341	14	19	7.20 to 8.10	5	No fit found		N/A
	342	14	24	7.20 to 8.10	5	No fit found		N/A
Argopecten irradians	18	15	24	7.48 to 8.08	3	6.35[£]	-0.47[£]	N/A
	41	60	25	7.45 to 8.15	4	7.57[£]	-0.73[£]	N/A
	231	20	24	7.80 to 8.21	3	7.69[£]	-0.13[£]	N/A
	232	20	28	7.80 to 8.21	3	7.68[£]	-0.23[£]	N/A
Chlamys farreri	299	<1	16	6.96 to 8.08	5	7.83[£]	0.00[£]	N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
Crassostrea gigas	34	<1	20	7.55 to 8.07	20	7.30[£]	-0.84[£]	N/A
	107	3	18.9	7.41 to 8.03	5	7.67 (7.65 to 7.69)[¥]	-0.04 (-0.07 to -0.01)	7.71
	108	3	18.9	7.41 to 8.03	4	7.65[£]	0.00[£]	N/A
	339	1	0	7.64 to 7.97	3	No fit found		N/A
	340	3	0	7.64 to 7.97	3	No fit found		N/A
Crassostrea virginica	20	20	24	7.48 to 8.08	3	6.37[£]	-0.14[£]	N/A
	42	60	25	7.45 to 8.15	4	7.57[£]	-0.74[£]	N/A
Crepidula fornicata	43	60	25	7.42 to 8.09	4	7.32 (7.21 to 7.44)[¥]	-0.30 (-0.50 to -0.09)	7.61
Limacina helicina	123	29	4.25	7.66 to 8.28[¤]	4	7.57[£]	-0.04[£]	N/A
	125	7	2	7.74 to 8.10[¤]	3	7.40[£]	-0.35[£]	N/A
	345	<1	0.5	7.63 to 8.17[¤]	5	7.62[£]	-0.02[£]	N/A
	346	<1	3.9	7.61 to 8.18[¤]	5	7.38[£]	-0.03[£]	N/A
Littorina littorea	47	60	25	7.42 to 8.09	4	6.99[£]	-1.05[£]	N/A
Mercenaria mercenaria	23	18	24	7.48 to 8.08	3	6.41 (6.10 to	-0.82 (-1.51 to -	7.20

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
						6.72)¥	0.13)	
	48	60	25	7.45 to 8.15	4	7.50 (7.40 to 7.6)€	-0.48 (-0.65 to -0.31)	7.96
	229	20	24	7.80 to 8.21	3	No fit found		N/A
	230	20	28	7.80 to 8.21	3	7.74 (7.70 to 7.79)€	-0.20 (-0.31 to -0.09)	7.94
Mya arenaria	37	60	25	7.45 to 8.15	4	6.83 (6.73 to 6.92)¥	-0.57 (-0.74 to -0.4)	7.37
Mytilus edulis	26	44	20	6.70 to 8.10	5	7.43£	-0.44£	N/A
	27	44	20	6.70 to 8.10	5	6.39£	-1.55£	N/A
	35	<1	20	7.46 to 8.13	30	7.18 (7.16 to 7.20)¥	-0.35 (-0.39 to -0.32)	7.52
	148	49	5	7.15 to 8.01	4	No fit found		N/A
	149	49	5	7.19 to 8.01	4	7.97£	-0.01£	N/A
	150	49	5	7.15 to 8.01	4	No fit found		N/A
	151	49	5	7.19 to 8.01	4	7.43£	-0.27£	N/A
	152	49	5	7.15 to 8.01	4	7.78£	-0.48£	N/A
	153	49	5	7.19 to	4	7.42£	-0.56£	N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
				8.01				
	182	70	12.9	7.36 to 8.06[¤]	3	7.21[£]	-0.07[£]	N/A
Ostrea lurida	285	9	20	7.80 to 8.00	3	7.22[£]	-0.58[£]	N/A
	286	16	20	7.80 to 8.00	3	7.53 (7.43 to 7.63)[¥]	-0.30 (-0.45 to -0.16)	7.82
	287	61	20	7.80 to 8.00	3	No fit found		N/A
Sepia officinalis	109	56	15	7.28 to 7.96	3	7.38[£]	-0.85[£]	N/A
	110	56	15	7.28 to 7.96	3	7.77 (7.76 to 7.78)[¥]	-0.04 (-0.08 to 0.00)	7.81
	111	56	15	7.28 to 7.96	3	7.27[£]	-0.70[£]	N/A
	112	56	15	7.28 to 7.96	3	No fit found		N/A
Strombus alatus	39	60	25	7.42 to 8.09	4	7.72[£]	-0.32[£]	N/A
Turbo cornutus	323	3	0	7.40 to 8.00	5	7.81[£]	-0.01[£]	N/A
	324	3	0	7.52 to 7.98	5	No fit found		N/A
Urosalpinx cinerea	40	60	25	7.42 to 8.09	4	7.83[£]	-0.31[£]	N/A
Rhodophyta								N/A
Corallina elongata	242	not clear	24.3	7.70 to 8.09	4	7.26[£]	-0.01[£]	N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
	243	not clear	24.3	7.70 to 8.09	4	No fit found		N/A
	270	30	18	7.72 to 8.09	4	7.43£	-0.01£	N/A
	271	30	18	7.72 to 8.09	4	8.00£	-0.01£	N/A
Lithothamnion corallioides	156	93	10	7.68 to 8.09¤	4	5.45£	-2.05£	N/A
	157	93	16	7.68 to 8.07¤	4	8.46£	0.16£	N/A
	158	93	19	7.72 to 8.02¤	4	No fit found		N/A
	159	93	10	7.68 to 8.09¤	4	7.39£	-0.79£	N/A
	160	93	16	7.68 to 8.07¤	4	7.34£	0.00£	N/A
	161	93	19	7.72 to 8.02¤	4	7.55£	-0.57£	N/A
	162	93	10	7.68 to 8.09¤	4	No fit found		N/A
	163	93	16	7.68 to 8.07¤	4	7.63£	-0.24£	N/A
	164	93	19	7.72 to 8.02¤	4	7.34£	-0.28£	N/A
Lithothamnion glaciale	180	30	7	7.72 to 8.03¤	4	No fit found		N/A
	183	90	7	7.72 to 8.03	4	7.44£	-0.01£	N/A
	184	300	7	7.72 to 8.03	4	7.52£	-0.02£	N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
	185	300	7	7.72 to 8.03	4	7.67 (7.65 to 7.69)¥	-0.04 (-0.07 to -0.01)	7.71
	343	28	9	7.52 to 8.06¤	4	8.06£	0.53£	N/A
	344	28	6.8	7.53 to 8.07¤	4	No fit found		N/A
Porolithon onkodes	53	56	25.5	7.65 to 8.20	3	7.15£	-0.49£	N/A
	56	56	25.5	7.65 to 8.20	3	6.71 (6.70 to 6.72)¥	-0.30 (-0.31 to -0.29)	7.00
	59	56	28.5	7.65 to 8.20	3	6.11£	-1.52£	N/A
	60	56	28.5	7.65 to 8.20	3	7.29 (7.28 to 7.30)€	-0.26 (-0.27 to -0.25)	7.54
	266	14	27	7.71 to 8.05	3	8.42£	0.12£	N/A
	267	10	27	7.71 to 8.01	3	7.81£	-0.08£	N/A
	268	7	27	7.73 to 7.99	3	-13.86£	-3.28£	N/A
(b) Reproduction								
Annelida								
Spirorbis spirorbis	191	30	16	7.33 to 8.11	3	7.64£	-0.29£	N/A
Arthropoda								

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
Acartia erythraea	29	8	27	6.91 to 8.15	3	7.57[£]	-0.25[£]	N/A
	30	8	27	6.82 to 8.09	4	7.59[£]	-0.32[£]	N/A
Acartia steueri	32	6	27	6.93 to 8.16	3	7.49[£]	-0.30[£]	N/A
Calanus finmarchicus	171	7	9.2	6.89 to 8.23	4	7.34 (7.31 to 7.37)[§]	-0.25 (-0.32 to -0.17)	7.58
Euphausia superba	113	10	0.5	7.43 to 8.06[¤]	3	7.03 (6.98 to 7.07)[§]	-0.30 (-0.36 to -0.25)	7.32
	114	10	0.5	7.43 to 8.06[¤]	3	7.29 (7.25 to 7.33)[€]	-0.31 (-0.39 to -0.24)	7.59
	115	10	0.5	7.43 to 8.06[¤]	3	7.18 (7.01 to 7.34)[€]	-0.34 (-0.54 to -0.14)	7.5
	116	10	0.5	7.43 to 8.06[¤]	3	7.32 (7.29 to 7.34)[€]	-0.27 (-0.32 to -0.22)	7.58
Bryozoa								
Celleporella hyalina	177	15	15	7.30 to 8.10	3	7.27[£]	-0.40[£]	N/A
	178	15	19	7.30 to 8.10	3	7.28 (7.25 to 7.31)[€]	-0.31 (-0.36 to -0.25)	7.57
	179	15	22	7.30 to 8.10	3	7.16 (6.98 to 7.34)[§]	-0.32 (-0.52 to -0.12)	7.46

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
Cnidaria								
Acropora palmata	132	<1	28	7.72 to 7.99[¤]	3	7.22 (7.13 to 7.30)[€]	-0.30 (-0.41 to -0.19)	7.5
	133	<1	28	7.72 to 7.99[¤]	3	7.26[£]	-0.40[£]	N/A
	134	<1	28	7.72 to 7.99[¤]	3	7.19 (6.97 to 7.42)[§]	-0.37 (-0.67 to -0.07)	7.55
	135	<1	28	7.72 to 7.99[¤]	3	7.11[£]	-0.31[£]	N/A
Balanophyllia elegans	69	93	0	7.60 to 8.00	3	7.06 (6.94 to 7.18)[§]	-0.30 (-0.40 to -0.20)	7.34
	70	93	0	7.60 to 8.00	3	7.67[£]	-0.27[£]	N/A
Echinodermata								
Echinometra mathaei	11	<1	24	6.78 to 8.11	6	7.66[£]	-0.19[£]	N/A
	24	<1	24	6.80 to 8.10	6	7.51[£]	-0.43[£]	N/A
	25	<1	24	6.80 to 8.10	6	7.48 (7.39 to 7.56)[§]	-0.29 (-0.53 to -0.05)	7.76
Heliocidaris erythrogramma	8	<1	22	7.60 to 8.17	3	6.96[£]	-0.99[£]	N/A
	9	<1	24	7.60 to 8.17	3	7.19[£]	-0.01[£]	N/A
	10	<1	26	7.60 to 8.17	3	7.24[£]	-0.03[£]	N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
	15	<1	24	7.77 to 8.20	4	7.75[£]	-0.15[£]	N/A
	16	<1	26	7.88 to 8.20	4	7.36[£]	-0.71[£]	N/A
Hemicentrotus pulcherrimus	13	<1	14	7.02 to 7.98	5	7.78[£]	-0.19[£]	N/A
Odontaster validus	272	<1	-0.5	7.00 to 8.10	4	Not fit found		N/A
	273	<1	-0.5	7.00 to 8.10	4	Not fit found		N/A
	274	<1	-0.5	7.00 to 8.10	4	-7.54[£]	-2.34[£]	N/A
	275	<1	-0.5	7.00 to 8.10	4	-7.54[£]	-2.34[£]	N/A
	276	58	-0.5	7.00 to 8.10	4	-7.54[£]	-2.34[£]	N/A
Ophiothrix fragilis	49	6	14	7.70 to 8.10	3	7.58[£]	-0.24[£]	N/A
	50	6	14	7.7 to 8.10	3	7.61[£]	-0.32[£]	N/A
Paracentrotus lividus	300	<1	14	6.80 to 8.00	4	-7.54[£]	-2.34[£]	N/A
	301	<1	14	6.80 to 8.00	4	-7.54[£]	-2.34[£]	N/A
	302	<1	14	6.80 to 8.00	4	7.14[£]	-0.04[£]	N/A
	303	<1	14	6.80 to 8.00	4	-7.54[£]	-2.34[£]	N/A
	304	<1	14	6.80 to 8.00	4	-7.54[£]	-2.34[£]	N/A
	305	<1	14	6.80 to	4	6.92[£]	-1.33[£]	N/A

Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
			8.00				
306	<1	14	6.80 to 8.00	4	Not fit found		N/A
307	<1	14	6.80 to 8.00	4	4.20[£]	-1.8[£]	N/A
308	<1	14	6.80 to 8.00	4	7.52 (7.42 to 7.61)[€]	-0.18 (-0.31 to -0.06)	7.69
309	<1	14	6.80 to 8.00	4	6.32 (5.88 to 6.75)[€]	-0.69 (-1.00 to -0.38)	6.98
310	<1	14	6.80 to 8.00	4	6.06 (5.25 to 6.88)[§]	-0.91 (-1.50 to -0.32)	6.93
311	<1	14	6.80 to 8.00	4	7.50 (7.49 to 7.51)[€]	-0.18 (-0.18 to -0.17)	7.67
312	<1	14	6.80 to 8.00	4	4.74[£]	-2.25[£]	N/A
313	<1	14	6.80 to 8.00	4	7.61 (7.60 to 7.62)[€]	-0.11 (-0.12 to -0.10)	7.72
314	<1	14	6.80 to 8.00	4	7.71[£]	-0.09[£]	N/A
315	<1	14	6.80 to 8.00	4	8.03[£]	-0.01[£]	N/A
316	<1	14	6.80 to 8.00	4	7.95 (7.88 to 8.02)[€]	-0.17 (-0.31 to -0.03)	8.11
317	<1	14	6.80 to	4	7.87[£]	-0.28[£]	N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH$_{50}$	β	pH$_{10}$
				8.00				
Strongylocentrotus droebachiensis	252	<1	0	7.59 to 8.05[¤]	5	7.40 (7.37 to 7.43)[§]	-0.11 (-0.20 to -0.02)	7.51
	253	<1	0	7.59 to 8.05[¤]	5	7.85[£]	-0.79[£]	N/A
	254	<1	0	7.59 to 8.05[¤]	5	7.69 (7.65 to 7.73)[€]	-0.16 (-0.24 to -0.08)	7.84
	255	<1	0	7.59 to 8.05[¤]	5	Not fit found		N/A
Strongylocentrotus franciscanus	186	<1	9	7.47 to 8.04	3	7.13 (6.99 to 7.27)[§]	-0.37 (-0.54 to -0.21)	7.49
	187	<1	9	7.47 to 8.04	3	7.54[£]	-0.15[£]	N/A
Tripneustes gratilla	288	5	24	7.60 to 8.15	3	Not fit found		N/A
	289	5	27	7.60 to 8.15	3	Not fit found		N/A
	290	5	30	7.60 to 8.15	3	-3.04[£]	-4.16[£]	N/A
Mollusca								
Crassostrea gigas	106	3	18.9	7.41 to 8.03	4	7.35 (7.32 to 7.38)[§]	-0.24 (-0.32 to -0.16)	7.58
Haliotis discus hannai	117	<1	20	7.68 to 8.00[¤]	4	7.15 (6.85 to 7.45)[€]	-0.35 (-0.70 to -0.01)	7.48
	118	<1	20	7.68 to	4	7.34	-0.22	7.55

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH50	β	pH10
				8.00[¤]		(7.33 to 7.35)[€]	(-0.24 to -0.20)	
	119	<1	20	7.40 to 8.00[¤]	5	7.23 (7.12 to 7.34)[€]	-0.32 (-0.48 to -0.16)	7.53
	120	<1	20	7.40 to 8.00[¤]	5	7.05 (7.00 to 7.09)[§]	-0.29 (-0.33 to -0.24)	7.32
Haliotis kamtschatkana	68	8	12	7.47 to 8.04	3	6.80[£]	-0.50[£]	
(c) Survival								
Arthropoda								
Acartia erythraea	28	8	27	6.91 to 8.15	3	7.57[£]	-0.01[£]	N/A
	31	8	27	6.82 to 8.09	4	6.87[£]	-1.18[£]	N/A
Acartia steueri	33	6	27	6.93 to 8.16	3	Not fit found		7.73
Amphibalanus improvisus	165	56	12	7.26 to 8.04[¤]	3	7.60 (7.57 to 7.63)[¶]	-0.14 (-0.22 to -0.06)	7.73
	166	56	20	7.32 to 8.11[¤]	3	7.84 (7.79 to 7.88)[€]	-0.13 (-0.20 to -0.05)	7.96
	167	56	27	7.44 to 8.18[¤]	3	7.60[£]	-0.01[£]	N/A
	168	28	12	7.26 to 8.04[¤]	3	6.33[£]	-0.70[£]	N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
	169	28	20	7.32 to 8.11[¤]	3	7.41[£]	-0.33[£]	N/A
	170	28	27	7.44 to 8.18[¤]	3	Not fit found		N/A
Calanus finmarchicus	172	7	9.5	6.94 to 8.23	4	6.62[£]	-1.24[£]	N/A
	173	7	9.5	6.94 to 8.23	4	7.72[£]	-0.01[£]	N/A
Cnidaria								
Acropora digitifera	154	3	27	7.30 to 8.00	3	5.91[£]	-0.09[£]	N/A
	155	7	27	7.30 to 8.00	3	7.66 (7.62 to 7.71)[¶]	-0.09 (-0.14 to -0.03)	7.75
	337	7	26.8	7.30 to 8.00	3	6.77[£]	-1.04[£]	N/A
Acropora tenuis	338	7	26.8	7.30 to 8.00	3	6.85[£]	-1.10[£]	N/A
Balanophyllia elegans	71	84	0	7.60 to 8.00	3	7.56[£]	-0.03[£]	N/A
	72	84	0	7.60 to 8.00	3	No fit found		N/A
Echinodermata								
Evechinus chloroticus	4	13	15	6.00 to 8.10	6	7.86[£]	-0.41[£]	N/A
Ophiothrix fragilis	51	8	14	7.70 to 8.10	3	6.84[£]	-0.45[£]	N/A
	52	8	14	7.70 to 8.10	3	7.36 (7.34 to 7.37)[¶]	-0.04 (-0.05 to -0.03)	7.39

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
Pseudechinus huttoni	5	9	12	6.00 to 8.15	6	7.87[£]	-0.36[£]	N/A
Sterechinus neumayeri	6	7	-1.9	6.00 to 8.00	5	7.74[£]	-0.42[£]	N/A
Strongylocentrotus droebachiensis	87	29	9	6.97 to 8.01	22	7.07[£]	-0.48[£]	N/A
Tripneustes gratilla	7	4	26	6.00 to 8.10	7	7.73[£]	-0.47[£]	N/A
Foraminifera								
Ammonia aomoriensis	277	56	8	7.27 to 8.10	4	7.66[£]	-0.20[£]	N/A
	278	56	8	7.26 to 8.06	4	1.19[£]	-3.76[£]	N/A
	279	56	8	7.26 to 8.11	4	Not fit found		N/A
	280	56	13	7.26 to 8.09	4	8.06[£]	-0.01[£]	N/A
	281	56	13	7.25 to 8.05	4	Not fit found		N/A
	282	56	13	7.27 to 8.07	4	7.51[£]	-0.51[£]	N/A
	283	56	18	7.20 to 8.05	4	7.26 (7.22 to 7.30)[€]	-0.43 (-0.48 to -0.38)	7.67
	284	56	18	7.25 to 8.10	4	7.04 (6.94 to 7.14)[¶]	-0.47 (-0.79 to -0.14)	7.48
Haptophyta								
Emiliania huxleyi	3	not clear	19	7.78 to 8.17	4	Not fit found		N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
Mollusca								
Argopecten irradians	17	19	24	7.48 to 8.08	3	7.70£	-0.44£	N/A
	227	20	24	7.80 to 8.21	3	7.25£	-0.56£	N/A
	228	20	28	7.80 to 8.21	3	Not fit found		N/A
Crassostrea virginica	19	20	24	7.48 to 8.08	3	7.72£	-0.37£	N/A
Haliotis discus hannai	121	<1	20	7.68 to 8.00¤	4	7.06£	-0.56£	N/A
	122	<1	20	7.40 to 8.00¤	5	7.13£	-0.41£	N/A
Haliotis kamtschatkana	67	8	12	7.47 to 8.04	3	7.11£	-0.23£	N/A
Limacina helicina	124	29	4.25	7.66 to 8.28¤	4	7.24£	-0.33£	N/A
Mercenaria mercenaria	21	15	24	7.79 to 8.02	4	7.72£	-0.32£	N/A
	22	18	24	7.48 to 8.08	3	7.75£	-0.30£	N/A
	225	20	24	7.80 to 8.21	3	Not fit found		N/A
	226	20	28	7.80 to 8.21	3	7.51£	-0.27£	N/A
Turbo cornutus	318	3	0	7.41 to 8.02	5	5.69£	-1.32£	N/A
	319	3	0	7.52 to 7.98	5	7.70£	-0.35£	N/A
	320	3	0	7.40 to	5	7.05£	-0.74£	N/A

	Logistic regression ID	Duration (day)	Temperature (˚C)	pH range	Samples	pH_{50}	β	pH_{10}
				8.00				
	321	3	0	7.41 to 8.02	5	7.11 (6.82 to 7.39)[¶]	-0.57 (-1.11 to -0.03)	7.65
	322	3	0	7.52 to 7.98	5	7.17 (6.98 to 7.36)[€]	-0.56 (-0.96 to -0.16)	7.7
Rhodophyta								
Phymatolithon lenormandii	256	14	18	7.55 to 8.00	8	7.49[£]	-0.17[£]	N/A
Porolithon onkodes	77	56	26	7.65 to 8.20	3	Not fit found		N/A
	78	56	29	7.65 to 8.20	3	7.37[£]	-0.03[£]	N/A
	79	56	26	7.65 to 8.20	3	7.33[£]	-0.05[£]	N/A
	80	56	29	7.65 to 8.20	3	7.06[£]	-0.44[£]	N/A
	81	56	26	7.65 to 8.20	3	6.29[£]	-0.90[£]	N/A
	82	56	29	7.65 to 8.20	3	7.09[£]	-0.51[£]	N/A
	269	3	25	7.60 to 7.98	3	7.55[£]	-0.50[£]	N/A

[¤] Experiments where pCO_2 was converted to pH (see conversion in appendix S2).
[£] Logistic regression returned pH_{50} or β coefficients non-different from zero or p value > 0.05
[€] pH_{50} not used in the PAF derivation because a higher pH_{50} is available for the same species and life process
[¥] pH_{50} used in the derivation of PAF for growth (also illustrated in Figure 1a of the main text)
[§] pH_{50} used in the derivation of PAF for reproduction (also illustrated in Figure 1b of the main text)
[¶] pH_{50} used in the derivation of PAF for survival (also illustrated in Figure 1c of the main text)

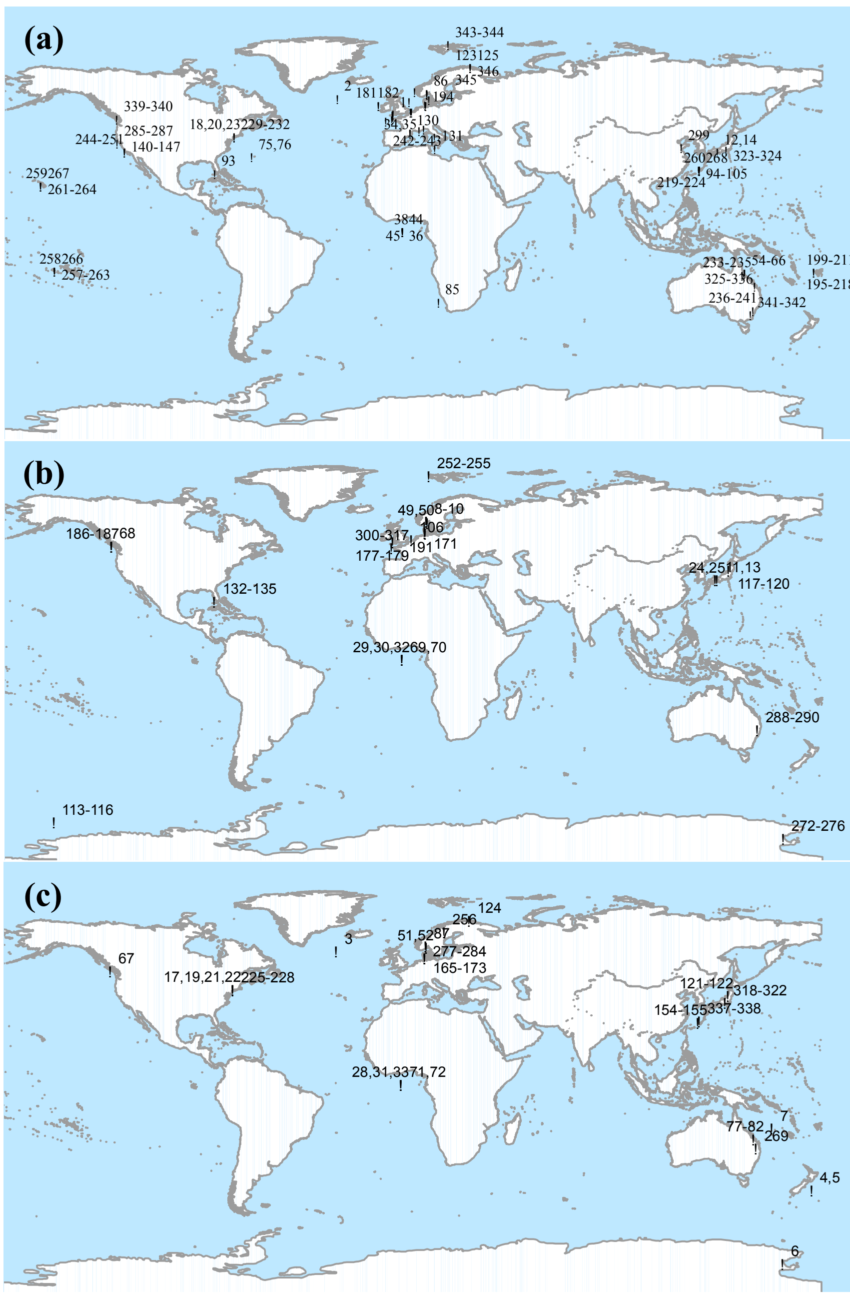
Table S3.2 Literature list from which the underlying data for logistic regressions were obtained and their reported effect. The ID of each logistic regression is listed in Table S3.1 and the location of each regression is illustrated in Figure S3.1.

Logistic regression ID	Reference	Reported effect
1	Wood et al.[2]	Egg diameter
2,3	Iglesias-Rodriguez[3]	Growth rate and detaching coccolith number
4-7	Clark et al.[4]	Relative mortality
8-10	Byrne et al.[5]	Fertilization and gastrulation success
11-14	Kurihara et al.[6]	Hatching and mortality rate, number of eggs, fertilization success, and length
15,16	Byrne et al.[7]	Fertilization and gastrulation success
17-23	Talmage & Gobler[8]	Calcification rate
24,25	Kurihara & Shirayama[9]	Relative embryo number
26,27	Berge et al.[10]	Relative growth increase
28-33	Kurihara et al.[11]	Hatching and mortality rate, number of eggs, fertilization success, and length
34,35	Gazeau et al.[12]	Calcification rate
36-48	Ries et al.[13]	Calcification rate
49-52	Dupont et al.[14]	Percentile of normal and symetric larvae, body length, and mortality rate
53-66	Anthony et al.[15]	Relative calcification and productivity rate
67,68	Crim et al.[16]	Percentile of normal larvae and number of larvae
69-72	Crook et al.[17]	Number of larvae and relative mortality of juveniles
73,74	De Bodt et al.[18]	Cell density and growth rate
75,76	de Putron et al.[19]	Weight
77-82	Diaz-Pulido et al.[20]	Relative healthy, dead, and pale tissue area
83,84	Donohue et al.[21]	Mineralization
85	Doo et al.[22]	Arm length
86,87	Dorey et al.[23]	Growth and mortality rate
88,89	Eberlein et al.[24]	Growth rate and POC production
90-92	Form & Riebesell [25]	Growth rate and weight
93	Albright & Langdon[26]	Growth rate

94-105	Fujita et al.[27]	Shell weight
106-108	Gazeau et al.[28]	Hatching and calcium incorporation rate, shell area and length
109-112	Hu et al.[29]	Embryo mantle length, embryo and hatching body mass
113-116	Kawaguchi et al.[30]	Hatching rate
117-122	Kimura et al.[31]	Fertilization success and mortality rate
123-125	Lischka et al.[32]	Relative degradation state and mortality rate
126-130	Maier et al.[33]	Growth rate
132-135	Albright et al.[34]	Fertilization success
136-139	Martin et al.[35]	Size of rods, arms, and width
140-147	Matson et al.[36]	Arm length and total length
148-153	Melzner et al.[37]	Mass growth and relative nacre dissolution
154,155	Nakamura et al.[38]	Survival rate
156-164	Noisette et al.[39]	Calcification rate
165-170	Pansch et al.[40]	Survival rate and larvae success
171-173	Pedersen et al.[41]	Hatching and survival rate
174-179	Pistevos et al.[42]	Growth rate and reproductive investment
180	Ragazzola et al.[43]	Cell growth
181,182	Appelhans et al.[44]	Relative biomass increase and relative shell growth
183-185	Ragazzola et al.[45]	Calcite volume and growth rate
186,187	Reuter et al.[46]	Time of polyspermy
188,189	Rodolfo-Metalpa et al.[47]	Calcification and dissolution rate
190-194	Saderne & Wahl[48]	Growth rate of juvenile, growth rate and juvenile settling rate
195-218	Schoepf et al.[49]	Calcification rate and tissue biomass
219-224	Takahashi & Kurihara[50]	Survival rate
225-232	Talmage & Gobler[8]	Larvae growth and length, mortality and survival rate
233-235	Vogel & Uthicke[51]	Growth rate
236-241	Wolfe K., Dworjanyn S.A., Byrne M.	Organism diameter and spine length
242,243	Asnaghi et al.[52]	Relative weight loss
244-251	Yu et al.[53]	Larval length
252-255	Bogner et al.[54]	Fertilization success and proportion of eggs with hyaline bleb

256	Bradassi et al.[55]	Mortality rate
257-268	Comeau et al.[56]	Calcification rate
269	Doropoulos & Diaz-Pulido[57]	Larvae mortality
270,271	Egilsdottir et al.[58]	Calcification rate
272-276	Gonzalez-Bernat et al.[59]	Fertilization success and larvae survival
277-284	Haynert & Schönfeld[60]	Growth rate of larvae
285-287	Hettinger et al.[61]	Growth rate of juvenile
288-290	Sheppard Brennand et al.[62]	Percentile of normal larvae
291-296	Iguchi et al.[63]	Relative calcification and total calcification rate
297,298	Lohbeck et al.[64]	Cell diameter
299	Mingliang et al.[65]	Calcification rate
300-317	Moullin et al.[66]	Fertilization success
318-324	Onitsuka et al.[67]	Embrio and larvae success and shell length
325-336	Sinutok et al.[68]	Tissue biomass
337,338	Suwa et al.[69]	Calcification rate
339,340	Timmins-Schiffman et al.[70]	Shell weight
341,342	Wolfe et al.[71]	Weight loss
343,344	Büdenbender et al.[72]	Relative calcification rate
345,346	Comeau et al.[73]	$CaCO_3$ precipitation rate

Figure S3.1 Location of literature studies from which the underlying data for logistic regressions **(a)** growth, **(b)** reproduction, and **(c)** survival were collected. The ID of each logistic regression is listed in Table S3.1. The location of occasional studies was unclear so they are not illustrated in this figure. The logistic regressions for unclear study locations are 28 – 33, 36 – 48, and 69 – 72 (see their corresponding literature in Table S3.2).



Appendix S4 Influence of water temperature and experiment duration

We tested the influence of temperature and experiment duration on pH_{50} and pH_{10} results employed in the species sensitivity distribution. Results are shown below in Table S4.1.

Table S4.1 Results of the Pearson correlation (coefficient / p value) between pH_{50} and duration and pH_{50} and temperature for **(a)** growth, **(b)** reproduction, and **(c)** survival.

	pH_{50}	pH_{10}
(a) Growth		
Duration	0.192 / 0.335	0.058 / 0.772
Temperature	0.020 / 0.583	0.229 / 0.240
(b) Reproduction		
Duration	-0.031 / 0.928	-0.507 / 0.111
Temperature	0.067 / 0.845	0.126 / 0.873
(c) Survival		
Duration	-0.072 / 0.908	0.135 / 0.864
Temperature	0.521 / 0.368	0.080 / 0.814

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