

Supplementary Materials

Recoverable impacts of ocean acidification on the tubeworm, *Hydroides elegans*: implication for biofouling in future coastal oceans

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Table S1. Measured and calculated values (mean \pm SD; $n = 4$) of carbonate system parameters in culture tanks. Parameter abbreviations: $p\text{CO}_2$: partial pressure of carbon dioxide; CO_3^{2-} : carbonate ion concentration; $\Omega_{\text{aragonite}}$: aragonite saturation state; Ω_{calcite} : calcite saturation state and TA: total alkalinity. Treatment abbreviations: C: pH 8.1 in stage 1; T: pH 7.8 in stage 1; CC: pH 8.1 in stage 1 and stage 2; CT: pH 8.1 in stage 1 and pH 7.8 in stage 2; TC: pH 7.8 in stage 1 and pH 8.1 in stage 2; TT: pH 7.8 in stage 1 and stage 2. 2 main stages in the experimental design: stage 1: 0-30 days (“0” denotes the time when the worms settled) and stage 2: 30-60 days.

Measured parameters					Calculated parameters				
Stage 1	Stage 2	pH	Salinity (psu)	Temperature ($^{\circ}\text{C}$)	TA ($\mu\text{equiv kg}^{-1}$)	$p\text{CO}_2$ (μatm)	CO_3^{2-} ($\mu\text{mol kg}^{-1}$)	Ω_{calcite}	$\Omega_{\text{aragonite}}$
C	CC/TC	8.09 \pm 0.01	34.0 \pm 0.1	22.5 \pm 0.1	2128 \pm 101	478 \pm 31	153.3 \pm 4	3.71 \pm 0.11	2.42 \pm 0.07
T	CT/TT	7.80 \pm 0.01	34.0 \pm 0.1	22.5 \pm 0.1	2152 \pm 92	1012 \pm 41	86.3 \pm 4	2.09 \pm 0.10	1.36 \pm 0.07

Table S2. Summary of the comparison on tube length, C/A ratio and density of stage 1 sections between CC and CT, and between TC and TT by using (a) student's t test and (b) Mann-Whitney U Test.

a. T-test Statistics

	t	df	<i>p</i>
Length			
CC vs CT	0.44	6	0.67
TT vs TC	0.29	6	0.77
C/A ratio			
CC vs CT	1.81	5	0.07
TT vs TC	-1.02	5	0.18
Density			
CC vs CT	-1.12	11	0.14

b. Mann-Whitney U Test

Density	
TT vs TC	<i>p</i> = 0.27

Table S3 Regression analyses of mechanical patterns (normalized hardness and stiffness) along the normalized length of the tubes from the CC, CT, TC and TT groups.

	Best-fit Regression				Response
	Regression	Type	<i>p</i>	R ²	
Hardness					
CC	y = 0.88x + 0.55	Linear	< 0.001	0.64	Positive
CT	No significant trend (p>0.05)	None	n/a	n/a	Neutral
TC	y = 11.11x ³ - 9.65x ² + 2.69x+ 0.13	Exponential	< 0.001	0.65	Threshold-positive
TT	y = 1.94x+ 0.03	Linear	< 0.001	0.45	Positive
Stiffness					
CC	y = x+ 0.50	Linear	< 0.001	0.58	Positive
CT	No significant trend (p>0.05)	None	n/a	n/a	Neutral
TC	y = 8.85x ³ - 6.75x ² + 1.39x+ 0.37	Exponential	< 0.001	0.60	Threshold-positive
TT	y = 2.12x- 0.06	Linear	< 0.001	0.38	Positive