Supplement of

Active Calcifying Fluid pH Upregulation Facilitates Resilience of the Coral *Tubastraea aurea* to Ocean Acidification

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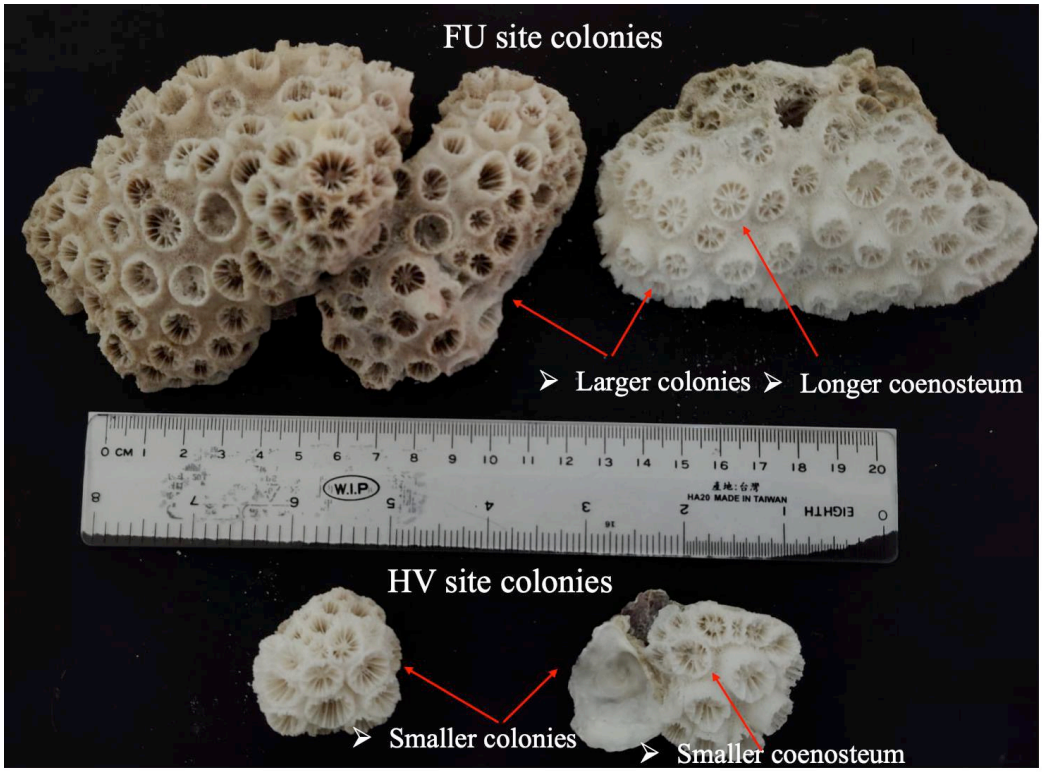


Figure S1: Showing the difference in size between the colonies collected from HV (hydrothermal vent) site and FU (Fulong) site. Upper section of the ruler shows colonies from FU site and the lower portion shows colonies from HV site.

Table S1. Skeletal $\delta^{11}B$ and pH_{CF} of uppermost thecal margins (Cr) and coenosteum (Cn) measurements of *T. aurea*.

Site	Sample type	$\delta^{11}B$(‰)	2SD	pH_{CF}	2SD
HV1	Cr	23.53	0.3	8.45	0.02
	Cn	22.96	0.95	8.41	0.04
HV2	Cr	23.87	0.05	8.47	0.02
	Cn	23.94	0.45	8.47	0.02
HV3	Cr	23.27	0.13	8.43	0.02
	Cn	22.83	0.04	8.4	0.02
FU1	Cr	22.73	0.3	8.38	0.02
	Cn	22.48	1	8.36	0.04
FU2	Cr	22.95	0.04	8.39	0.02
	Cn	23.1	0.67	8.4	0.03
FU3	Cr	22.77	0.02	8.38	0.02
	Cn	24.24	0.59	8.47	0.02

Table S2. Summary of ($\delta^{11}B$) and pH parameters for HV and FU sites, featuring mean values, effect sizes with 95% confidence intervals, and permutation-based *p*-values.

Variable	HV_Mean	FU_Mean	Effect_Size	CI_Lower	CI_Upper	*p*_Value
$\delta^{11}B$	23.555	22.814	0.741	0.379	1.103	0.09921
pH_{CF}	8.447	8.381	0.066	0.042	0.089	0.10431
ΔpH	1.83	0.385	1.446	1.263	1.628	0.105711
pH_{SW}	6.617	7.997	-1.38	-1.55	-1.21	0.09871

Table S3: Results showing the morphometric parameters obtained from SEM image. HV = hydrothermal vent site and FU = Fulong site. * Significant at the $p < 0.05$ level (2-tailed).

Parameters	FU	HV	
	Average ± SD	Average ± SD	*p*-value (t-test)
Distance between rods dorsal (mm)	0.45±0.06	0.51±0.09	0.03*
Perforation (mm)	0.28±0.09	0.26±0.09	0.40
Distance between septa ventral (mm)	0.81±0.17	0.96±0.40	0.37
Dorsal rod thickness (mm)	0.21±0.06	0.18±0.08	0.33
Ventral spines(mm)	0.06±0.01	0.06±0.01	0.58

Table S4: Results showing morphometric parameters measured using stereo microscope, * significant at the $p < 0.05$ level (2-tailed).

	FU	HV	
Parameters	**Average ± SD**	**Average ± SD**	***p*-value (t-test)**
Area(mm²)	6279.92 ±3778.22	7510.49 ±2264.80	0.596
Length perimeter(mm)	283.82 ±32.19	309.38 ±183.30	0.654
coenosarc (mm)	24.98 ±1.66	7.07 ±1.10	0.010*
Coral colony length (mm)	13 ±2.83	3.5 ±0.71	0.04*

70