

Supplementary tables

Table S1. Health index scores and calculation.

Health indicator	Chengue	Score	Inca Inca	Score
Coral cover mean %	74.56	5	72.00	5
Macroalgae cover mean %	22.22	3	10.94	4
Vibrios proportion in tissue mean UFC*g ⁻¹	1.00E+05	3	1.00E+07	2
Health Index Mean	-	3.67	-	3.67

Table S2. PERMANOVA analysis of the microbiological data.

Data set (between sites)	Correlation analysis (Draftsman plot)	Transformation	Resemblance	PERMANOVA test	SS	Pseudo-F	df	P value
Microbiol site	No redundancy	Fourth root	Bray-Curtis similarity	Type III, Unrestricted	4143.2	9.74	28	0.001
Microbiol health condition	No redundancy	Fourth root	Bray-Curtis similarity	Type III, Unrestricted	681.57	1.60	28	0.188
Microbiol compartment	No redundancy	Fourth root	Bray-Curtis similarity	Type III, Unrestricted	14743	34.68	28	0.001
Microbiol vibrios site	No redundancy	Log (X+1)	Bray-Curtis similarity	Type III, Unrestricted	1938.2	14.41	26	0.001
Microbiol vibrios health condition	No redundancy	Log (X+1)	Bray-Curtis similarity	Type III, Unrestricted	370.96	2.75	26	0.097
Microbiol vibrios compartment	No redundancy	Log (X+1)	Bray-Curtis similarity	Type III, Unrestricted	16377	121.77	26	0.001
Microbiol heterotrophs site	No redundancy	Log (X+1)	Bray-Curtis similarity	Type III, Unrestricted	5259.8	31.66	27	0.001
Microbiol heterotrophs health condition	No redundancy	Log (X+1)	Bray-Curtis similarity	Type III, Unrestricted	649.45	3.91	27	0.057
Microbiol heterotrophs compartment	No redundancy	Log (X+1)	Bray-Curtis similarity	Type III, Unrestricted	13853	83.4	27	0.001

Table S3. PERMANOVA analysis of the environmental and biological-coverage data.

Data set (between sites)	Correlation analysis (Draftsman plot)	Transformation	Resemblance	PERMANOVA test	SS	Pseudo-F	df	P value
Environmental	Redundancy between orthofosfates and SST	Log (X+1)	Euclidean distance	Type III, Unrestricted	19.62	3.09	5	0.096
Overall coverage	No redundancy	Square root	Bray-Curtis similarity	Type III, Unrestricted	14444	24.17	119	0.001
<i>Madracis</i> coverage	N/A	Square root	Bray-Curtis similarity	Type III, Unrestricted	8.55	0.11	119	0.795
Coverage (no-<i>Madracis</i>)	No redundancy	Square root	Bray-Curtis similarity	Type III, Unrestricted	55789	27.45	115	0.001

Table S4. DistLM analyses of the RDA model of the environmental and biological data.

Variables	R ² Adj	R ² Adj Ac	Pseudo-F	df	p Value
Orthophosphate	0.41	0.53	4.52	4	0.042
Nitrates	0.82	0.96	2.15	4	0.319
Nitrites	0.46	0.68	1.36	4	0.320
pH	0.71	0.89	3.62	4	0.098

Table S5. Chi² analysis of the biological interaction data.

Pair interaction	X ²	df	p Value
<i>M. auretenra</i> -filamentous/cyanobacteria	7,54	1	0,006
<i>M. auretenra</i> -fleshy	26,93	1	0,000
<i>M. auretenra</i> -CCA	41,73	1	0,000
<i>M. auretenra</i> -other hard coral	2,03	1	0,153
<i>M. auretenra</i> -soft coral	7,43	1	0,006
<i>M. auretenra</i> -sponge	25,28	1	0,000
<i>M. auretenra</i> -other invertebrate	0,53	1	0,464

Table S6. Environmental conditions in the patches of *Madracis auretenra* at both sites. S1: Chengue, S2: Inca Inca, T: Temperature, S: Salinity, TSS: Total suspended solids.

Site	Replicate	Depth (m)	T (°C)	S	pH	O ₂ (%)	O ₂ (mg*L ⁻¹)	Ammonia (µg L ⁻¹)	Phosphates (µg L ⁻¹)	Nitrates (µg L ⁻¹)	Nitrites (µg L ⁻¹)	TSS (mg L ⁻¹)
S1	1	9.20	26.40	36.10	8.91	72.00	5.62	10.00	2.00	2.10	0.91	3.69
S1	2	11.34	26.20	36.30	8.18	67.60	6.01	10.00	2.00	5.58	1.46	3.61
S1	3	8.46	26.50	36.20	8.63	79.50	6.30	11.60	2.00	7.25	1.58	3.57
S2	1	3.96	25.90	36.30	8.35	65.00	5.39	11.60	3.28	21.70	1.63	1.40
S2	2	3.96	26.60	36.10	8.34	81.70	5.70	11.80	3.09	20.05	1.43	1.77
S2	3	5.43	26.40	36.40	8.39	63.00	5.22	13.40	2.83	21.60	1.56	1.62

Table S7. Counts of total vibrios and heterotrophs. S1: Chengue, S2: Inca Inca, S: Healthy, E: Diseased, M: Mucus, T: Tissue.

Site	Condition	Compartment	Total vibrios			Total Heterotrophs		
			Count	Dilution factor	UFC*ml ⁻¹ or g ⁻¹	Count	Dilution factor	UFC*ml ⁻¹ or g ⁻¹
S1	S	M	17	1.00E+03	1.70E+04	3	1.00E+03	3.00E+03
S1	S	M	0	1.00E+04	0.00E+00	0	1.00E+04	0.00E+00
S1	S	T	25	1.00E+03	2.47E+06	4	1.00E+03	3.95E+05
S1	S	T	0	1.00E+04	0.00E+00	2	1.00E+03	1.97E+05
S1	E	M	30	1.00E+03	3.00E+04	7	1.00E+03	7.00E+03
S1	E	M	3	1.00E+03	3.00E+03	8	1.00E+03	8.00E+03
S1	E	T	1	1.00E+04	9.87E+05	5	1.00E+03	4.93E+05
S1	E	T	0	1.00E+04	0.00E+00	12	1.00E+03	1.18E+06
S1	S	M	1	1.00E+04	1.00E+04	3	1.00E+03	3.00E+03
S1	S	M	0	1.00E+04	0.00E+00	0	1.00E+04	0.00E+00
S1	S	T	9	1.00E+03	8.88E+05	0	1.00E+04	0.00E+00
S1	S	T	0	1.00E+04	0.00E+00	0	1.00E+04	0.00E+00

S1	E	M	24	1.00E+02	2.40E+03	36	1.00E+02	3.60E+03
S1	E	M	21	1.00E+02	2.10E+03	42	1.00E+02	4.20E+03
S1	E	T	5	1.00E+04	4.93E+06	34	1.00E+04	3.36E+07
S1	E	T	4	1.00E+04	3.95E+06	21	1.00E+04	2.07E+07
S2	S	M	7	1.00E+04	7.0E+04	27	1.00E+04	2.70E+05
S2	S	M	3	1.00E+04	3.0E+04	4	1.00E+04	4.00E+04
S2	S	T	4	1.00E+04	3.9E+06	12	1.00E+04	1.18E+07
S2	S	T	6	1.00E+04	5.9E+06	17	1.00E+04	1.68E+07
S2	E	M	34	1.00E+04	3.4E+05	51	1.00E+04	5.10E+05
S2	E	M	41	1.00E+04	4.1E+05	32	1.00E+04	3.20E+05
S2	E	T	47	1.00E+03	4.6E+06	23	1.00E+03	2.27E+06
S2	E	T	33	1.00E+03	3.3E+06	31	1.00E+03	3.06E+06
S2	S	M	40	1.00E+03	4.0E+04	37	1.00E+03	3.70E+04
S2	S	M	11	1.00E+03	1.1E+04	125	1.00E+03	1.25E+05
S2	S	T	10	1.00E+04	9.9E+06	32	1.00E+04	3.16E+07
S2	S	T	10	1.00E+04	9.9E+06	12	1.00E+04	1.18E+07
S2	E	M	18	1.00E+04	1.8E+05	24	1.00E+04	2.40E+05
S2	E	M	24	1.00E+04	2.4E+05	42	1.00E+04	4.20E+05
S2	E	T	36	1.00E+04	3.6E+07	37	1.00E+04	3.65E+07
S2	E	T	89	1.00E+04	8.8E+07	23	1.00E+04	2.27E+07

Table S8. Coverage (%) of the benthic categories associated with the *Madracis auretenra* patches. CCA: Crustose coralline algae.

	Chengue			Inca Inca		
Coverage (%)	Mean	SD	SE	Mean	SD	SE
<i>Madracis auretenra</i>	72.22	9.43	5.45	71.94	6.53	3.77
Other hard coral	2.33	2.96	1.71	0.06	0.10	0.06
Soft coral	1.78	3.08	1.78	0.00	0.00	0.00
Filamentous/cyanobacteria	11.39	1.58	0.91	5.72	4.61	2.66

Fleshy	7.44	9.61	5.55	0.00	0.00	0.00
CCA	3.39	2.78	1.60	5.22	0.79	0.45
Erect sponge	0.06	0.10	0.06	1.67	2.03	1.17
Encrusting sponge	0.06	0.10	0.06	1.44	1.25	0.72
Sand	0.56	0.82	0.47	4.61	3.87	2.24
Gap	0.11	0.10	0.06	0.50	0.17	0.10
Coral rubble	0.67	1.01	0.59	8.83	3.56	2.06
Sponges	0.11	0.10	0.06	3.11	1.00	0.58
Abiotic substrate	1.33	1.88	1.08	13.94	3.73	2.15

Table S9. Frequency of contact (%) between *M. auretenra* and other benthic categories. CCA: Crustose coralline algae.

	Chengue			Inca Inca		
Contact (%)	Mean	SD	SE	Mean	SD	SE
<i>Madracis</i> -filamentous/cyanobacteria	24.75	17.99	2.32	11.23	15.23	1.97
<i>Madracis</i> -fleshy	12.28	20.93	2.70	0.00	0.00	0.00
<i>Madracis</i> -CCA	17.78	13.58	1.75	2.66	8.81	1.14
<i>Madracis</i> -hard coral	0.27	1.62	0.21	0.00	0.00	0.00
<i>Madracis</i> -soft coral	5.73	17.69	2.28	0.00	0.00	0.00
<i>Madracis</i> -sponge	0.20	1.15	0.15	7.00	12.47	1.61
<i>Madracis</i> -other invertebrate	7.06	9.30	1.20	5.52	8.32	1.07
No contact	31.93	24.61	3.18	73.60	21.74	2.81