Supplementary Tables

Table S1. Survey data in *Diadema* and No-*Diadema* zones. The data shown are counts of *Diadema antillarum* as well as other key herbivores. These surveys were conducted by 2 divers along 30-m-long and 2-m-wide transects and were averaged (± SD).

	Director's Bay				Marie Pampoen			
	Diadema		No-*Diadema*		*Diadema*		No-*Diadema*	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Diadema antillarum	165.5	5.0	0	0	121.5	2.1	0	0
Tripneustus ventricosus	2.5	0.7	1.0	0	2.0	0	1.0	0
Echinometra lucunter	2.5	0.7	4.0	1.4	1.0	0	1.5	0.7
Turbo canaliculatus	16.0	4.2	18.5	5.0	28.0	4.2	41.0	5.7
Cyphoma gibbosum	0	0	0.5	0.7	0	0	0	0
Cerithiopsis spp.	2.0	0	2.5	0.7	6.0	1.4	5.0	1.4
Ophioblennius atlanticus	21.0	0	23.0	1.4	14.5	0.7	16.0	1.4
Scarisoma spp. and *Scarus* spp.	17.0	1.4	17.0	2.8	22.5	2.1	25.5	2.1
Acanthurus spp.	14.5	0.7	17.5	0.7	6.0	0	7.5	0.7
Thassaloma spp.	12.0	0	12.0	1.4	8.5	2.1	10.0	1.4

Table S2. Statistical results for Welch's t-tests comparing herbivore counts in *Diadema* zones and No-*Diadema* zones at each site

	Director's Bay				Marie Pampoen			
	t	df	Error	p	*t*	df	Error	p
Diadema antillarum	47.283	2	3.500	0.000	80.717	2	1.499	0.000
Tripneustus ventricosus	2.988	2	0.502	0.090	n.a.	n.a.	n.a.	n.a.
Echinometra lucunter	1.344	2	1.116	0.311	0.996	2	0.502	0.424
Turbo canaliculatus	0.543	2	4.609	0.642	3.020	2	4.304	0.094
Cyphoma gibbosum	1.010	2	0.495	0.419	n.a.	n.a.	n.a.	n.a.
Cerithiopsis spp.	0.996	2	0.502	0.424	0.709	2	1.410	0.552
Ophioblennius atlanticus	0.201	2	0.997	0.183	1.344	2	1.116	0.311
Scarisoma spp. and *Scarus* spp.	0.000	2	2.236	1.000	1.415	2	2.120	0.293
Acanthurus spp.	4.225	2	0.710	0.052	2.988	2	0.502	0.096
Thassaloma spp.	0.000	2	0.997	1.000	0.833	2	1.800	0.492

Table S3. Statistical results for all permutational multivariate analyses of variance (PERMANOVAs) comparing benthic community composition on tiles between different treatments. Results for the exposed topsides and cryptic undersides of tiles in function of Site and *Diadema* treatments

	Exposed topsides					Cryptic undersides				
Factor	df	SS	MS	Pseudo-*F*	p	df	SS	MS	Pseudo-*F*	p
Bare substrate										
Site	1	219.61	219.61	0.29	0.587	1	188.3	188.3	0.4	0.832
Diadema	1	243.65	243.65	0.33	0.540	1	303.4	303.4	0.7	0.517
Site × *Diadema*	1	314.48	314.48	0.42	0.511	1	162.3	162.3	0.4	0.878
Res	14	10469	747.8			55	24359.0	442.9		
Crustose coralline algae										
Site	1	215.8	215.8	2.5	0.107	1	1354.2	1354.2	3.8	*0.015*
Diadema	1	2682.3	2682.3	30.7	*0.001*	1	225.8	225.8	0.6	0.656
Site × *Diadema*	1	31.1	31.1	0.4	0.608	1	208.7	208.7	0.6	0.738
Res	108	9437.9	87.4			52	18798.0	3615.0		
Encrusting algae										
Site	1	110.8	110.8	0.4	0.798	1	3092.2	3092.2	7.0	*0.002*
Diadema	1	598.1	598.1	2.1	0.093	1	332.6	332.6	0.8	0.477
Site × *Diadema*	1	477.3	477.3	1.7	0.174	1	1446.7	1446.7	3.3	*0.027*
Res	108	30357.0	281.1			56	24618.0	439.6		

Supplementary Table 3. Continued

	Exposed topsides					Cryptic undersides				
Factor	df	SS	MS	Pseudo-*F*	p	df	SS	MS	Pseudo-*F*	p
Turf algae										
Site	1	207.2	207.2	0.6	0.589	1	860.6	860.6	2.0	0.115
Diadema	1	6478.7	6478.7	17.9	*0.001*	1	862.1	862.1	1.9	0.109
Site × *Diadema*	1	1284.7	1284.7	3.5	*0.029*	1	355.0	355.0	0.8	0.465
Res	101	36656.0	36293.0			50	21559.0	431.2		
Non-calcifying macroalgae										
Site	1	1589.0	1589.0	0.9	1.00	1	4321.0	4321.0	7.5	*0.012*
Diadema	n.a.	n.a.	n.a.	n.a.	n.a.	1	4766.3	4766.3	8.3	*0.003*
Site × *Diadema*	n.a.	n.a.	n.a.	n.a.	n.a.	1	4605.7	4605.7	8.0	*0.003*
Res	4	7252.2	1813.1			5	2880.0	576.0		
Sessile invertebrates										
Site	n.a.	n.a.	n.a.	n.a.	n.a.	1	766.9	766.9	1.4	0.258
Diadema	n.a.	n.a.	n.a.	n.a.	n.a.	1	3235.7	3235.7	5.8	*0.002*
Site × *Diadema*	n.a.	n.a.	n.a.	n.a.	n.a.	1	801.6	801.6	1.4	0.245
Res	n.a.	n.a.	n.a.	n.a.	n.a.	37	20659.0	558.3		

Table S4. Statistical results for larval settlement preferences. Outcomes of chi-squared goodness-of-fit tests for settlement preferences for the tiles' different surface orientations for each Site × *Diadema* treatment combination. Significant results ($p < 0.05$) are indicated by italicized letters

	Cryptic undersides	Exposed topsides	Test statistic	p
Director's Bay - *Diadema* zone				
Expected	15.84	19.01		
Observed	77.59	22.41	247.33	*0.000*
X^2	240.77	0.61		
Director's Bay - No-*Diadema* zone				
Expected	10.82	12.99		
Observed	82.07	17.93	477.55	*0.000*
X^2	469.06	1.88		
Marie Pampoen - *Diadema* zone				
Expected	19.24	23.09		
Observed	70.57	29.43	144.05	*0.000*
X^2	136.92	1.74		
Marie Pampoen - No-*Diadema* zone				
Expected	16.31	19.57		
Observed	62.59	37.41	153.03	*0.000*
X^2	131.33	16.25		

Table S5. Survival probabilities derived from Kaplan-Meier analyses at the 2 different sites

Site	Treatment	Time in mo	n.risk	n.event	Survival probability	SE	Lower 95% CI	Upper 95% CI
		1.5	114	29	0.7456	0.0408	0.6698	0.83
	Present	3	85	24	0.5351	0.0467	0.45094	0.6349
Director's		12	61	59	0.0175	0.0123	0.00444	0.0693
Bay		28*	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		1.5	906	693	0.2351	0.01409	0.209046	0.2644
	Absent	3	213	31	0.20088	0.01331	0.176417	0.22874
		12	182	180	0.00221	0.001556	0.000553	0.00881
		28	2	2	0	n.a.	n.a.	n.a.
		1.5	388	275	0.2912	0.02307	0.2494	0.3401
	Present	3	133	38	0.1933	0.02005	0.1577	0.2369
		12	75	67	0.0206	0.00721	0.0104	0.0409
Marie		28*	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Pampoen								
		1.5	1016	840	0.1732	0.01187	0.1145	0.1981
	Absent	3	176	35	0.1388	0.01085	0.11907	0.1618
		12	141	127	0.0138	0.00366	0.00819	0.0232
		28*	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

* no mortality after 12 months

Table S6. Statistical results from the (a) Kaplan-Meier analysis and (b) Log-rank tests per time-point. Significant results ($p < 0.05$) are indicated by italicized letters

a

	Survival curve					Log-Rank		
Site	chisq	df	P-value	C-index	Score	Hazard ratio	AIC	P(Log-Rank)
Director's Bay	60.3	1	*<0.0001*	0.61	44.87	0.5	12050.61	*<0.0001*
Marie Pampoen	9.1	1	*0.0025*	0.564	10.53	0.8	17445.15	*0.001*

b

			Log-Rank				
Site	Timepoint	C-index	Score	df	Hazard ratio	AIC	P(Log-Rank)
Director's Bay	0-1.5	0.623	82.44	1	0.1	9184.22	*<0.0001*
	1.5-3	0.593	7.77	1	0.5	611	*0.006*
	3-12	0.627	0.35	1	1	2186.25	0.553
	12-28	0.556	0.02	1	1	12101.58	0.893
Marie Pampoen	0-1.5	0.572	18.41	1	0.7	14829.01	*< 0.0001*
	1.5-3	0.587	6.95	1	0.5	802.67	*0.009*
	3-12	0.509	0.02	1	1	1802.37	0.891
	12-28*	n.a.	n.a.	1	n.a.	n.a.	n.a.

* no mortality after 12 months

Table S7. Sessile invertebrate community composition in the cryptic habitats of the tiles conditioned in *Diadema* zones and No-*Diadema* zones. Values are percent cover ± SD and are averaged across all tiles deployed at both Director's Bay and Marie Pampoen (n = 60 tiles). These percentages only include sessile invertebrates (and not the other benthic groups) and therefore do not sum up to 100%

Sessile invertebrates	*Diadema* zones	No-*Diadema* zones
Tunicates	0.53 ± 2.7	1.53 ± 4.3
Barnacles	0.45 ± 0.9	0.00 ± 0.0
Bryozoans	2.13 ± 5.9	4.21 ± 7.3
Sponges	0.62 ± 4.6	2.17 ± 6.5
Calcareous polychaete tubes	2.25 ± 5.7	8.39 ± 17.5
Invertebrate eggs	0.04 ± 2.1	1.49 ± 4.1
total cover (%)	6.02	17.79

Supplementary Figures

Fig. S1. Percent cover of the 6 main benthic groups on the exposed topsides and cryptic undersides of ceramic and limestone tiles after 3 mo for each Site × *Diadema* treatment combination (n = 20)