SUPPLEMENTARY MATERIAL

Table S1. A) Summary of culling effort. Noting that the hours of culling efforts refers only to the dive time associated directly to sea urchin removal, thus excluding the time spent to set up systematic culling transects. B) ANOVAs testing the effect of culling on sea urchin density (n° individuals m^{-2}) across time.

A)

Cull location	Days	Number of divers	Number of urchins removed	Hours of culling effort	Cull rate (urchins/diver/min)
1	1	5	8756	7.5	19.46
	2	8	13122	12	18.23
	3	7	12568	10.5	19.95
	4	8	13898	12	19.30
2	5	6	9112	9	16.87
	6	6	9823	9	18.19
	7	8	13114	12	18.21
	8	8	12125	12	16.84
Totals		56	92518	84	Mean = 18.38

B)

Source of variation	df	MS	*F*	*P*
Time = Ti	4	77.41	15.51	0.0008
Treatment = Tr	1	391.68	1120.69	0.0009
Si = Si(Tr)	2	0.35	0.12	0.8844
Ti × Tr	4	12.86	2.58	0.1185
Ti × Si(Tr)	8	4.99	1.76	0.1144
Residuals	40	2.84		
Total	59			

Table S2. List of taxa found in the study. The aggregations adopted for univariate analyses were also reported. Abbreviations used in canonical analysis of principal coordinates (CAP) are also reported. * Taxa not considered in univariate analyses.

TURF FORMING ALGAE	**Abbr.**
Acetabularia acetabulum	
Amphiroa rigida	Amp
Anadyomene stellata	Ana
Articulated Corallines	AC
Caulerpa cylindracea	Cau
Dark Filamentous Algae	DFA
Dasycladus vermicularis	Dver
Dumontiaceae	
Green Filamentous Algae	GFA
Liagora viscida	Lvis
Stypocaulaceae	
Tricleocarpa fragilis	Tfra
Valonia macrophysa	
ERECT MACROALGAE	
Codium bursa	Cod
Cystoseira compressa	Cys
Dictyotales	Dic
Flabellia petiolata	Fla
Halimeda tuna	
Laurencia complex	Lau
Padina pavonica	Pad
Sphaerococcus coronopifolius	
Wrangelia penicillata	Wra
ENCRUSTING ALGAE*	
Encrusting Calcified Rhodophyceae	ECR
Palmophyllum crassum	
Peyssonnelia spp.	Pey

INVERTEBRATES	**Abbr.**
Actinia sp.	Act
Aiptasia mutabilis	Aip
Aplysina aerophoba	
Ascidia mentula	Asc
Balanophyllia europea	Beur
Botryllus sp.	
Calcareus Tube Worms	CTW
Caryophyllia smithii	Cary
Cereus pedunculatus	
Chondrilla nucula	
Chondrosia reniformis	
Cladocora caespitosa	
Cliona spp.	
Didemnidae	Did
Encrusting Bryozoans	EB
Encrusting Red Sponges	ERS
Halocinthya papillosa	
Hemimycale columella	Hem
Hydroids	Hyd
Ircinia variabilis	
Lithophaga lithophaga	
Massive Dark Sponges	MDS
Petrosia ficiformis	
Phorbas tenacior	
Rocellaria dubia	
Terpios fugax	
Thin Ramified Bryozoans	
Vermetidae	Ver

Table S3. Summary of PERMANOVA testing the effect of sea urchin culling on the compositional structure of benthic assemblages. Analyses were based on Jaccard dissimilarities (presence/absence data), and each test was performed using 4999 permutations of appropriate units. Results of pair-wise tests for the significant term Ti × Tr were reported below. G –: sea urchins culled; G +: reference conditions. Only test relevant to the hypotheses are reported.

Source of variation	df	MS	Pseudo-*F*	*P(perm)*
Time = Ti	4	36926	2.85	
Treatment = Tr	1	135570	7.00	0.0002
Site = Si(Tr)	2	19354	8.73	0.006
Transect = Ts(Si(Tr))	8	25675	2.52	
Ti × Tr	4	2217	1.98	0.0384
Ti × Si(Tr)	8	12966	4.53	0.0002
Ti × Ts(Si(Tr))	32	2859	3.25	
Residuals	540	880		
Total	599			

Pair-wise test for term Ti × Tr

G+	G–
T0=T1=T2=T3=T4	T0=T1=T2=T3=T4

T0	T1	T2	T3	T4
G+ = G–	G+ = G–	G+ ≠ G–	G+ ≠ G–	G+ = G–

Figure S1. Canonical analysis of principal coordinates (CAP) for the factor Ti × Tr based on the distance matrix (Jaccard dissimilarity index, i.e., presence absence data) of areas of assemblages in the different sampling times (T0:T4). Numbers (from 0 to 4) indicate the sampling times. G+ = reference conditions; G– = manipulated conditions.

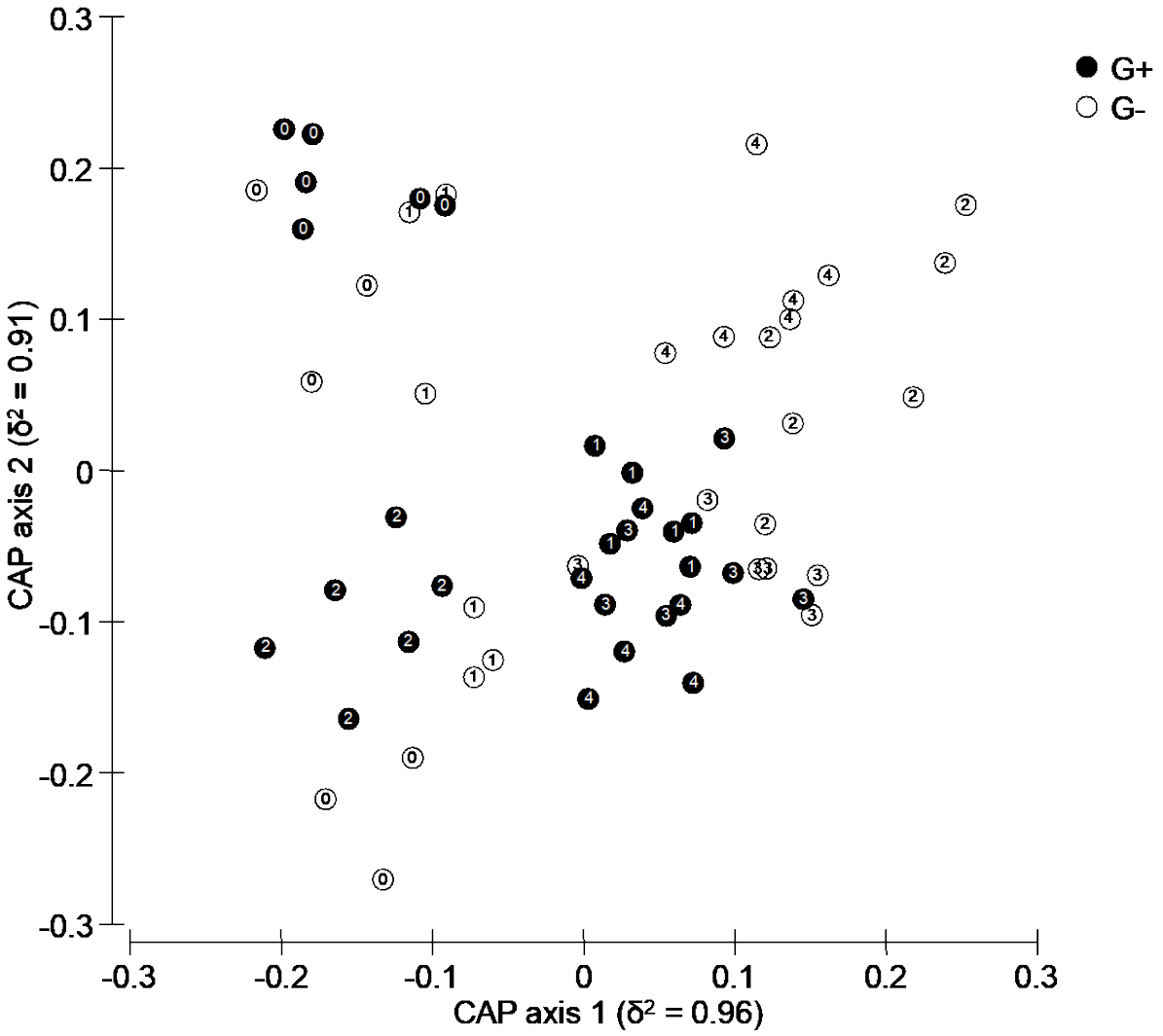

Figure S2. Final state of the rocky reefs characterizing reference (a) and culling (b) sites (i.e. after 3 years from the intervention).