Trophic downgrading reduces spatial variability on rocky reefs

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Supplemental material

Table S1. Results of nested PERMANOVAs evaluating variation in community assemblages among the different spatial scales (among quadrats within each site, among sites within each island, and among islands) for A) kelp forests and B) urchin barrens based on abundance data, and for C) kelp forests and D) urchin barrens based on biomass data. For each analysis, the degrees of freedom weighted variance and percent of the total variation explained by each factor (i.e., magnitude of effects ω^2) is given according to Graham and Edwards[57], as is the total underlying variation in each model. Prior to analysis, all data were square root transformed to down weigh the influence of overly abundant taxa.

A. Kelp - Density

Source	df	SS	MS	Pseudo-F	P(perm)	Variance	ω^2
Island	8	1.47E+05	18413	2.50	0.001	558.87	0.20
Site(Island)	9	66307	7367.4	4.56	0.001	582.11	0.21
Quadrat(Site(Island))	160	2.58E+05	1614.4			1614.40	0.59
Total	177	4.06E+05				2755.38	

B. Barrens - Density

Source	df	SS	MS	Pseudo-F	P(perm)	Variance	ω^2
Island	8	91619	11452	3.06	0.001	385.77	0.23
Site(Island)	9	33633	3737	3.70	0.001	272.83	0.16
Quadrat(Site(Island))	162	1.63E+05	1008.7			1008.70	0.61
Total	179	2.89E+05				1667.30	

C. Kelp - Biomass

Source	df	SS	MS	Pseudo-F	P(perm)	Variance	ω^2
Island	8	5193.7	649.21	2.58	0.068	20.10	0.20
Site(Island)	9	2267	251.89	4.10	0.001	19.27	0.19
Quadrat(Site(Island))	160	9832.9	61.46			61.46	0.61
Total	177	17293.6				100.83	

D. Barren - Biomass

Source	df	SS	MS	Pseudo-F	P(perm)	Variance	ω^2
Island	8	15846	1980.70	8.52	0.003	87.41	0.65
Site(Island)	9	2092.4	232.49	8.66	0.001	20.56	0.15
Quadrat(Site(Island))	162	4349.1	26.85			26.85	0.20
Total	179	22287.5				134.82	