

1 Supplementary Information

2 **Table S1.** SIMPER analysis of marine communities using Euclidean distance for swath surveys (n = 1 per site), using factor habitat (kelp forest vs.
3 Rhodolith bed). The contribution of taxonomic units to dissimilarity of habitats within (across sites, n = 4 per habitat) and between kelp forests and
4 rhodolith beds. Av value refers to abundance, sq distances refer to dissimilarity between habitats along and divided by the standard deviation, and %
5 contribution of each taxonomic unit to overall habitat dissimilarity within and across habitat types (average squared distance). Cut-off for low
6 contributions was set at 90%.

Taxonomic Unit	Av Value	Av Sq Distance	Sq Distance/StDev	% Contribution	Cumulative %
<u>Kelp Forest</u>					
Average squared distance = 12.45					
<i>Cucumaria frondosa</i>	0	0	#####	0	0
Amphipoda	1	0	#####	0	0
<i>Chlamys islandica</i>	0.25	0.25	0.55	2.01	2.01
<i>Bolinopsis infundibulum</i>	0.25	0.25	0.55	2.01	4.02
<i>Dendronotus frondosus</i>	0.25	0.25	0.55	2.01	6.02
<i>Leptasterias polaris</i>	0.25	0.25	0.55	2.01	8.03
<i>Myoxocephalus scorpius</i>	0.25	0.25	0.55	2.01	10.04
<i>Haliclona</i> sp.	0.297	0.354	0.55	2.84	12.88
<i>Gadus morhua</i>	0.297	0.354	0.55	2.84	15.72
<i>Mycale</i> sp.	0.329	0.433	0.55	3.48	19.2
<i>Mytilus</i> spp.	0.354	0.5	0.55	4.02	23.21
<i>Reniera rufescens</i>	0.354	0.5	0.55	4.02	27.23
<i>Gymnocanthus tricuspis</i>	0.657	0.64	0.63	5.14	32.37
<i>Myxilla</i> sp.	0.492	0.968	0.55	7.78	40.15
<i>Cellaria</i> sp.	0.529	1.12	0.55	8.98	49.12
<i>Semibalanus balanoides</i>	1.75	1.49	0.57	11.95	61.07
<i>Psolus fabricii</i>	1.19	1.9	0.68	15.24	76.31
<i>Strongylocentrotus droebachiensis</i>	1.48	2.95	0.67	23.69	100
<u>Rhodolith Beds</u>					
Average squared distance = 2.18					
<i>Mytilus</i> spp.	0	0	#####	0	0
<i>Chlamys islandica</i>	0	0	#####	0	0
<i>Reniera rufescens</i>	0	0	#####	0	0
<i>Haliclona</i> sp.	0	0	#####	0	0
<i>Mycale</i> sp.	0	0	#####	0	0
<i>Myxilla</i> sp.	0	0	#####	0	0

<i>Leptasterias polaris</i>	0	0	#####	0	0
<i>Cellaria</i> sp.	0	0	#####	0	0
<i>Psolus fabricii</i>	0	0	#####	0	0
<i>Myoxocephalus scorpius</i>	0	0	#####	0	0
<i>Gadus morhua</i>	0	0	#####	0	0
Amphipoda	1	0	#####	0	0
<i>Cucumaria frondosa</i>	1.16	3.33E-02	0.68	1.53	1.53
<i>Dendronotus frondosus</i>	0.25	0.25	0.55	11.47	13
<i>Gymnocanthus tricuspis</i>	0.25	0.25	0.55	11.47	24.46
<i>Strongylocentrotus droebachiensis</i>	5.2	0.281	0.55	12.89	37.35
<i>Bolinopsis infundibulum</i>	0.579	0.464	0.66	21.27	58.62
<i>Semibalanus balanoides</i>	1.42	0.902	0.55	41.38	100

Between Rhodolith Beds & Kelp Forests

Average squared distance = 29.21	Rhodolith Bed	Kelp Forest	Av Sq Distance	Sq Distance/StDev	% Contribution	Cumulative %
<i>Strongylocentrotus droebachiensis</i>	1.48	5.2	16.3	1.37	55.7	55.7
<i>Psolus fabricii</i>	1.19	0	2.84	0.96	9.73	65.44
<i>Semibalanus balanoides</i>	1.75	1.42	1.9	0.81	6.51	71.95
<i>Cucumaria frondosa</i>	0	1.16	1.37	3.61	4.68	76.63
<i>Cellaria</i> sp.	0.529	0	1.12	0.56	3.83	80.45
<i>Myxilla</i> sp.	0.492	0	0.968	0.56	3.31	83.77
<i>Gymnocanthus tricuspis</i>	0.657	0.25	0.833	0.83	2.85	86.62
<i>Bolinopsis infundibulum</i>	0.25	0.579	0.644	0.92	2.2	88.82
<i>Mytilus</i> spp.	0.354	0	0.5	0.56	1.71	90.53

9 **Table S2.** SIMPER analysis of marine communities using Euclidean distance for photo-quadrats surveys (n = 1 per site), using factor habitat (kelp forest
10 vs. Rhodolith bed). The contribution of taxonomic units (including substrate type) to dissimilarity of habitats within (across sites, n = 4 per habitat) and
11 between kelp forests and rhodolith beds. Av value refers to abundance, sq distances refer to dissimilarity between habitats and divided by the standard
12 deviation, and % contribution of each taxonomic unit to overall habitat dissimilarity within and across habitat types (average squared distance). Cut-
13 off for low contributions was set at 90%.

Taxonomic Unit	Av Value	Av Sq Distance	Sq Distance/StDev	% Contribution	Cumulative %
<u>Kelp Forest</u>					
Average squared distance = 0.35					
Rhodolith	0	0	#####	0	0
pebble	0	0	#####	0	0
<i>Hiatella arctica</i>	0	0	#####	0	0
<i>Semibalanus balanoides</i>	1.47E-03	7.35E-05	0.17	0.02	0.02
filamentous green algae	1.47E-03	7.35E-05	0.17	0.02	0.04
<i>Cucumaria frondosa</i>	1.47E-03	7.35E-05	0.17	0.02	0.06
<i>Palmaria palmata</i>	2.94E-03	1.43E-04	0.25	0.04	0.1
<i>Gymnocanthus tricuspis</i>	2.94E-03	2.94E-04	0.17	0.08	0.19
shell	7.35E-03	7.78E-04	0.21	0.22	0.41
<i>Mycale</i> sp.	8.82E-03	9.80E-04	0.24	0.28	0.69
<i>Porphyra</i> spp.	1.32E-02	2.32E-03	0.22	0.66	1.36
<i>Strongylocentrotus droebachiensis</i>	1.47E-02	2.50E-03	0.23	0.72	2.07
<i>Alaria escuelenta</i>	1.47E-02	2.96E-03	0.2	0.85	2.92
<i>Cucumaria</i> sp.	1.47E-02	4.78E-03	0.18	1.37	4.29
<i>Desmarestia aculeata</i>	1.47E-02	4.93E-03	0.18	1.41	5.7
CCA	3.82E-02	5.77E-03	0.3	1.65	7.36
<i>Ulva</i> spp.	2.50E-02	5.95E-03	0.23	1.7	9.06
<i>Celaria</i> sp.	2.35E-02	8.07E-03	0.25	2.31	11.37
filamentous algae	3.97E-02	1.15E-02	0.27	3.29	14.66
rock	6.76E-02	2.06E-02	0.27	5.9	20.56
marine detritus	5.88E-02	3.19E-02	0.23	9.14	29.7
sediment	0.1	3.55E-02	0.31	10.16	39.85
<i>Sacchrina longicruris</i>	0.129	4.27E-02	0.37	12.25	52.1
<i>Agarum clathratum</i>	0.176	7.17E-02	0.45	20.54	72.64
sand	0.243	9.55E-02	0.48	27.36	100

Rhodolith Bed

Average squared distance = 0.23

<i>Alaria escuelenta</i>	0	0	#####	0	0
<i>Desmarestia aculeata</i>	0	0	#####	0	0
<i>Gymnocanthus tricuspis</i>	0	0	#####	0	0
<i>Cucumaria frondosa</i>	0	0	#####	0	0
<i>Cucumaria</i> sp.	0	0	#####	0	0
<i>Cellaria</i> sp.	0	0	#####	0	0
<i>Porphyra</i> spp.	1.25E-03	6.25E-05	0.16	0.03	0.03
<i>Palmaria palmata</i>	1.25E-03	6.25E-05	0.16	0.03	0.05
<i>Mycale</i> sp.	1.25E-03	6.25E-05	0.16	0.03	0.08
marine detritus	3.75E-03	1.78E-04	0.28	0.08	0.16
sediment	3.75E-03	1.78E-04	0.28	0.08	0.23
filamentous green algae	3.75E-03	3.06E-04	0.19	0.13	0.37
<i>Semibalanus balanoides</i>	1.00E-02	6.67E-04	0.31	0.29	0.65
shell	1.13E-02	9.60E-04	0.27	0.41	1.07
<i>Hiatella arctica</i>	2.13E-02	1.52E-03	0.38	0.66	1.72
CCA	1.13E-02	1.99E-03	0.23	0.86	2.58
rock	2.63E-02	3.72E-03	0.31	1.6	4.18
sand	2.50E-02	1.00E-02	0.22	4.31	8.49
<i>Ulva</i> spp.	3.63E-02	1.01E-02	0.29	4.36	12.85
<i>Sacchrina longicruris</i>	1.75E-02	1.06E-02	0.16	4.56	17.41
filamentous algae	3.63E-02	1.67E-02	0.28	7.18	24.59
pebbles	3.88E-02	1.71E-02	0.25	7.37	31.97
<i>Strongylocentrotus droebachiensis</i>	0.113	2.65E-02	0.34	11.42	43.39
<i>Agarum clathratum</i>	6.25E-02	3.95E-02	0.24	17	60.39
Rhodolith	0.576	9.19E-02	0.49	39.61	100

Between Rhodolith Beds & Kelp

Forests

Average squared distance = 1.00

	Rhodolith Bed	Kelp Forest	Av Sq Distance	Sq Distance/StDev	% Contribution	Cumulative %
Rhodolith	0	0.576	0.422	1.44	42.26	42.26

sand	0.243	2.50E-02	0.15	0.63	15.01	57.27
<i>Agarum clathratum</i>	0.176	6.25E-02	0.121	0.57	12.13	69.4
<i>Sacchrina longicruris</i>	0.129	1.75E-02	6.43E-02	0.46	6.45	75.85
sediment	0.1	3.75E-03	4.38E-02	0.34	4.39	80.24
<i>Strongylocentrotus droebachiensis</i>	1.47E-02	0.113	3.78E-02	0.41	3.79	84.03
detritus	5.88E-02	3.75E-03	3.42E-02	0.24	3.42	87.46
filamentous algae	3.97E-02	3.63E-02	2.74E-02	0.39	2.75	90.2

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Table S3. SIMPER analysis of marine communities using Euclidean distance for grab surveys (n = 5 per site), using factor habitat (kelp forest vs. Rhodolith bed). The contribution of taxonomic units to dissimilarity of habitats within (across sites, n = 4 per habitat) and between kelp forests and rhodolith beds. Av value refers to abundance, sq distances refer to dissimilarity between habitats along and divided by the standard deviation, and % contribution of each taxonomic unit to overall habitat dissimilarity within and across habitat types (average squared distance). Cut-off for low contributions was set at 90%.

Taxonomic unit	Av Value	Av Sq Distance	Sq Distance/StDev	% Contribution	Cumulative %
<u>Rhodolith Beds</u>					
Average squared distance = 8.94					
<i>Cryptonatica affinis</i>	0	0	#####	0	0
<i>Calanus</i> sp.	0	0	#####	0	0
<i>Mycid</i>	0	0	#####	0	0
<i>Sargatiogeton laceratus</i>	5.56E-02	5.56E-02	0.24	0.62	0.62
<i>Acanthonotozoma inflatum</i>	5.56E-02	5.56E-02	0.24	0.62	1.24
<i>Mytilus</i> spp.	6.61E-02	7.86E-02	0.24	0.88	2.12
<i>Weyphrechtia pinguis</i>	0.111	0.105	0.34	1.17	3.29
<i>Margarites helacinus</i>	0.122	0.126	0.34	1.41	4.7
<i>Littorina saxatilis</i>	0.129	0.143	0.33	1.6	6.3
<i>Euchurian</i> sp.	0.167	0.147	0.41	1.64	7.95
<i>Psolus fabricii</i>	0.177	0.168	0.41	1.87	9.82
<i>Hyas coarctatus</i>	0.233	0.202	0.47	2.26	12.08
<i>Nipponnemertes pulcher</i>	0.278	0.212	0.52	2.37	14.46
<i>Strongylocentrotus droebachiensis</i>	0.243	0.221	0.47	2.48	16.93
<i>Margarites</i> sp.	0.25	0.236	0.46	2.64	19.58
<i>Tonicella rubra</i>	0.354	0.269	0.55	3	22.58
<i>Ennucula tenuis</i>	0.277	0.286	0.47	3.2	25.78
<i>Gattyana cirrosa</i>	0.932	0.289	0.49	3.23	29.01
<i>Gibula</i> sp.	0.476	0.304	0.59	3.4	32.4
Lophophore worms	0.681	0.321	0.58	3.58	35.99
<i>Phyllodoce groenlandica</i>	0.493	0.335	0.57	3.74	39.73
<i>Tectura testudinalis</i>	0.505	0.356	0.56	3.98	43.71
<i>Macoma calcarea</i>	0.907	0.367	0.52	4.11	47.82
<i>Siphonocentallium lobatum</i>	1.03	0.37	0.49	4.14	51.95
<i>Ophiura sarsi</i>	0.732	0.389	0.57	4.35	56.3
<i>Helicon</i> sp.	0.548	0.407	0.58	4.55	60.85

Phoronid worms	0.387	0.432	0.49	4.83	65.68
Asteroidea	0.629	0.441	0.58	4.93	70.61
<i>Natica clausa</i>	0.217	0.469	0.28	5.25	75.86
<i>Hiatella arctica</i>	0.831	0.495	0.57	5.53	81.39
<i>Semibalanus balanoides</i>	0.633	0.58	0.54	6.49	87.88
Amphipoda	1.33	1.08	0.55	12.12	100

Kelp Forests

Average squared distance = 6.55

<i>Littorina saxatilis</i>	0	0	#####	0	0
<i>Strongylocentrotus droebachiensis</i>	0	0	#####	0	0
<i>Weyphrechtia pinguis</i>	0	0	#####	0	0
<i>Ennucula tenuis</i>	5.00E-02	5.00E-02	0.23	0.76	0.76
<i>Cryptonatica affinis</i>	5.00E-02	5.00E-02	0.23	0.76	1.53
<i>Euchurian</i> sp.	5.00E-02	5.00E-02	0.23	0.76	2.29
<i>Hyas coarctatus</i>	5.00E-02	5.00E-02	0.23	0.76	3.05
Mycid	5.00E-02	5.00E-02	0.23	0.76	3.82
<i>Tectura testudinalis</i>	5.95E-02	7.07E-02	0.23	1.08	4.9
<i>Psolus fabricii</i>	5.95E-02	7.07E-02	0.23	1.08	5.98
<i>Nipponnemertes pulcher</i>	5.95E-02	7.07E-02	0.23	1.08	7.06
<i>Acanthonotozoma inflatum</i>	5.95E-02	7.07E-02	0.23	1.08	8.14
Asteroidea	6.58E-02	8.66E-02	0.23	1.32	9.46
<i>Tonicella rubra</i>	7.07E-02	0.1	0.23	1.53	10.98
<i>Helicon</i> sp.	7.07E-02	0.1	0.23	1.53	12.51
Phoronids	7.07E-02	0.1	0.23	1.53	14.04
<i>Hiatella arctica</i>	0.119	0.134	0.32	2.05	16.08
<i>Mytilus</i> spp.	0.15	0.134	0.39	2.05	18.13
<i>Ophiura sarsi</i>	0.128	0.164	0.3	2.51	20.64
<i>Gibula</i> sp.	0.175	0.191	0.36	2.91	23.55
<i>Calanus</i> sp.	0.18	0.198	0.38	3.03	26.58
<i>Siphonocentallium lobatum</i>	1.31	0.24	0.37	3.67	30.25
<i>Margarites helcinus</i>	0.275	0.244	0.48	3.72	33.97
<i>Sargatiogeton laceratus</i>	0.241	0.248	0.44	3.79	37.76
<i>Margarites</i> sp.	0.252	0.273	0.44	4.17	41.93

<i>Semibalanus balanoides</i>	0.295	0.289	0.46	4.41	46.34
<i>Phyllodoce groenlandica</i>	0.388	0.297	0.55	4.54	50.88
<i>Macoma calcarea</i>	1.26	0.506	0.48	7.72	58.6
<i>Gattyana cirrosa</i>	0.869	0.513	0.53	7.83	66.43
<i>Natica clausa</i>	0.376	0.526	0.41	8.04	74.47
Amphipoda	1.72	0.684	0.47	10.45	84.92
Lophophore worms	1.02	0.988	0.53	15.08	100

Between Rhodolith Beds & Kelp Forests

Average squared distance = 17.53	Group rhodolith	Group kelp	Av Sq Dist	Sq Dist/SD	Contrib%	Cum.%
Amphipoda	1.33	1.72	1.83	0.82	10.42	10.42
Lophophore worms	0.681	1.02	1.36	0.8	7.75	18.17
<i>Hiatella arctica</i>	0.831	0.119	1.1	1.09	6.28	24.45
<i>Natica clausa</i>	0.217	0.376	0.969	0.5	5.52	29.97
<i>Macoma calcarea</i>	0.907	1.26	0.954	0.83	5.44	35.42
<i>Semibalanus balanoides</i>	0.633	0.295	0.937	0.81	5.34	40.76
<i>Ophiura sarsi</i>	0.732	0.128	0.887	1.06	5.06	45.82
Asteroidea	0.629	6.58E-02	0.816	0.92	4.65	50.48
<i>Gattyana cirrosa</i>	0.932	0.869	0.764	0.84	4.36	54.83
<i>Helicon</i> sp.	0.548	7.07E-02	0.706	0.86	4.03	58.86
<i>Siphonocentallium lobatum</i>	1.03	1.31	0.653	0.69	3.73	62.59
<i>Phyllodoce groenlandica</i>	0.493	0.388	0.61	0.92	3.48	66.06
Phoronid worms	0.387	7.07E-02	0.604	0.6	3.44	69.51
<i>Tectura testudinalis</i>	0.505	5.95E-02	0.602	0.82	3.44	72.94
<i>Gibula</i> sp.	0.476	0.175	0.559	0.88	3.19	76.13
<i>Margarites</i> sp.	0.25	0.252	0.483	0.68	2.75	78.88
<i>Tonicella rubra</i>	0.354	7.07E-02	0.429	0.7	2.45	81.33
<i>Margarites helcinus</i>	0.122	0.275	0.374	0.64	2.14	83.47
<i>Ennucula tenuis</i>	0.277	5.00E-02	0.369	0.56	2.11	85.57
<i>Sargatiogeton laceratus</i>	5.56E-02	0.241	0.323	0.53	1.84	87.41
<i>Nipponnemertes pulcher</i>	0.278	5.95E-02	0.315	0.65	1.8	89.21
<i>Hyas coarctatus</i>	0.233	5.00E-02	0.272	0.57	1.55	90.76