SUPPLEMENTAL MATERIAL

Table S1: Summary of taxa tissue collections including sampling date and replication of biomass, SI, and FA analysis. Tissue indicates whole body (WB), all soft tissues (ST), foot muscle (FM), and muscle (M). Sample measurement (Meas.), if applicable, indicates specimen total length (TL), shell width (SW), carapace width (CW) or fork length (FL). Mean (± SD) specimen lengths are given for each species where applicable.

					n per site		n per region								
Common name	Scientific name	Abbr.	Sample date(s) - high	Sample date(s) - low	Biomass - high	Biomass - low	SI - high	SI - low	FA - high	FA - low	Tissue	Tissues pooled	Meas.	Size (mm) - high	Size (mm) - low
Primary producers															
Seagrass	*Zostera marina*	SG	7/14 - 7/16	7/11 - 7/13	8	8	7	6	7	6	WB				
Seagrass epiphytes	Class Bacillariophyceae	EP	7/14 - 7/16	7/11 - 7/13	8	8	5	3	5	3	WB				
Rockweek	*Fucus distichus*	FU	7/14 - 7/16	7/11 - 7/13			6	6	6	6	WB				
Sugar kelp	*Saccharina latissima*	SK	7/14 - 7/16	7/11 - 7/13			5	6	5	6	WB				
Sea lettuce	*Ulva* spp.	UL	7/14 - 7/16	7/11 - 7/13			6	5	6	6	WB				
Primary consumers															
Seagrass isopod	*Pentidotea rascata*	IDO	7/14 - 7/16	7/11 - 7/13	8	8	6	7	6	7	WB	X	TL	36.5 (4.6)	36.1 (2.4)
Seagrass limpet	*Lottia pelta*	LMP	7/14 - 7/16	7/11 - 7/13	8	8	-	-	6	7	ST	X			
Butter clam	*Saxidomus giganteus*	BUT	8/15	7/11 - 7/13	8	8	6	6	5	6	FM	X	SW	29.8 (5.6)	70.2 (6.3)
Macoma clam	*Macoma* spp.	MAC	7/14 - 7/16	7/11 - 7/13	8	8	6	6	6	6	FM	X	SW	41.3 (7.3)	39.1 (4.0)
Secondary consumers															
Dock shrimp	*Pandalus danae*	DSH	7/29 - 7/31	7/26 - 7/28			6	6	6	6	M	X	TL	85.8 (3.9)	83.3 (3.3)
Helmet crab	*Telmessus cheiragonus*	HEL	7/22	7/28	4	4	6	4	6	4	M		CW	44.5 (2.3)	40.0 (4.5)
Graceful crab	*Metacarcinus gracilis*	GRC	7/22	7/28	4	4	5	6	5	6	M		CW	62.8 (3.6)	72.0 (11.5)
Red rock crab	*Cancer productus*	RRC	7/22	7/28	4	4	-	6	-	6	M		CW	-	150.5 (4.7)
Shiner perch	*Cymatogaster aggregata*	SHN	7/29 - 7/31	7/26 - 7/28	1	1	6	6	6	6	M		FL	122.8 (3.7)	122.7 (4.2)
Snake prickleback	*Lumpenus sagitta*	SNK	7/29 - 7/31	7/26 - 7/28	1	1	6	4	6	5	M		FL	158.0 (21.5)	162.3 (57.4)
Staghorn sculpin	*Leptocottus armatus*	STG	7/29 - 7/31	7/26 - 7/28	1	1	6	6	6	6	M		FL	160.3 (14.8)	144.8 (35.6)

Table S2: Length – weight relationships for crab and fish species used in Equation 1.

Common name	Scientific name	Family	a	b	Notes
Cockle	*Clinocardium nuttalli*	Cardiida	0.0004	2.9453	Bradbury et al. 2005
Hiatella clam	*Hiatella sp.*	Hiatellidae	0.1660	3.1350	Robinson et al. 2010
Baltic macoma	*Macoma baltica*	Tellinidae	0.0046	2.5212	Oftedal et al. 2007; used *Macoma nasuta* values
Pointed macoma	*Macoma inquinata*	Tellinidae	0.0046	2.5212	Oftedal et al. 2007; used *Macoma nasuta* values
Bentnose macoma	*Macoma nasuta*	Tellinidae	0.0046	2.5212	Oftedal et al. 2007
Softshell clam	*Mya arenaria*	Myidae	0.0003	2.8956	Bradbury et al. 2015
Steamer clam	*Protothaca staminea*	Veneridae	0.0005	2.7080	Oftedal et al. 2007
Butter clam	*Saxidomus gigantea*	Veneridae	0.0002	3.1559	Bradbury et al. 2015
Horse clam	*Tresus nuttallii*	Mactridae	0.0002	2.0730	Lauzier et al. 1998
Dungeness crab	*Metacarcinus magister*	Cancridae	0.0053	2.1949	Oftedal et al. 2007
Decorator crab	*Oregonia gracilis*	Oregoniidae	0.0088	2.1525	kelp crab (*Pugettia producta*) values used
Red rock crab	*Cancer productus*	Cancridae	0.0014	2.4625	Oftedal et al. 2007
Helmet crab	*Telmessus cheiragonus*	Cheiragonidae	0.0088	2.1525	kelp crab (*Pugettia producta*) values used
Graceful rock crab	*Metacarcinus gracilis*	Cancridae	0.0053	2.1949	Oftedal et al. 2007, Dungeness crab used
Unknown rock crab		Cancridae	0.0034	2.3287	average of red rock and Dungeness crab
Cabezon	*Scorpaenichthys marmoratus*	Cottidae	0.0291	3.0000	Froese et al. 2014
Slender cockscomb	*Anoplarchus insignis*	Stichaeidae	0.0039	3.1200	Froese et al. 2014
Pacific cod	*Gadus macrocephalus*	Gadidae	0.0095	3.1153	Gunderson et al. 1988, Nielsen 1992, Orlov et al. 2009
Dolly varden	*Salvelinus malma*	Salmonidae	0.0052	3.1150	Froese et al. 2014, Underwood et al. 1997
Starry flounder	*Platichthys stellatus*	Pleuronectidae	0.0109	3.1059	Froese et al. 2014, IGFA 2001
Kelp greenling	*Hexagrammos decagrammus*	Hexagrammidae	0.0156	3.0000	Froese et al. 2014
Masked greenling	*Hexagrammos octogrammus*	Hexagrammidae	0.0046	3.1300	Froese et al. 2014
Whitespotted greenling	*Hexagrammos stelleri*	Hexagrammidae	0.0031	3.4278	Froese et al. 2014
Crescent gunnel	*Pholis laeta*	Pholidae	0.0018	3.1500	Froese et al. 2014
Penpoint gunnel	*Apodichthys flavidus*	Pholidae	0.0018	3.1500	Froese et al. 2014
Pacific Herring	*Clupea pallasii*	Clupeidae	0.0067	3.1509	Froese et al. 2014, Park and Huh 2015
Lingcod	*Ophiodon elongatus*	Hexagrammidae	0.0133	3.0000	Froese et al. 2014
Shiner perch	*Cymatogaster aggregata*	Embiotocidae	0.0195	3.0200	Froese et al. 2014
Bay Pipefish	*Syngnathus leptorhynchus*	Syngnathidae	0.0002	3.1200	Bayer 1980
Pygmy poacher	*Odontopyxis trispinosa*	Agonidae	0.0039	3.1200	Froese et al. 2014
Sturgeon poacher	*Podothecus accipenserinus*	Agonidae	0.0039	3.1200	Froese et al. 2014

Tubenose poacher	*Pallasina barbata*	Agonidae	0.0039	3.1200	Froese et al. 2014
Walleye pollock	*Gadus chalcogrammus*	Gadidae	0.0195	2.8753	Froese et al. 2014
Snake prickleback	*Lumpenus sagitta*	Stichaeidae	0.0019	2.9900	Froese et al. 2014
Black rockfish	*Sebastes melanops*	Sebastidae	0.0211	3.0000	Froese et al. 2014
Brown rockfish	*Sebastes auriculatus*	Sebastidae	0.0102	3.0700	Froese et al. 2014
Copper rockfish	*Sebastes caurinus*	Sebastidae	0.0175	3.0000	Colton and Larson 2007, Froese et al. 2014
Quillback rockfish	*Sebastes maliger*	Sebastidae	0.0297	3.0000	Froese et al. 2014
Unknown rockfish	*Sebastes sp.*	Sebastidae	0.0172	3.0492	mean values of known *Sebastes* sp.and Colton and Larson 2007
Chinook salmon	*Oncorhynchus tshawytscha*	Salmonidae	0.0133	3.0000	Froese et al. 2014
Chum salmon	*Oncorhynchus keta*	Salmonidae	0.0185	3.1000	Froese et al. 2014
Coho salmon	*Oncorhynchus kisutch*	Salmonidae	0.0112	3.0000	Froese et al. 2014
Pink salmon	*Oncorhynchus gorbuscha*	Salmonidae	0.0137	3.2500	Erokhin et al. 1990
Pacific sand lance	*Ammodytes personatus*	Ammondytidae	0.0404	3.0060	Froese et al. 2014
Buffalo sculpin	*Enophrys bison*	Cottidae	0.0091	3.0900	Jeong et al. 1997
Great sculpin	*Myoxocephalus polyacanthocephalus*	Cottidae	0.0125	3.1356	Froese et al. 2014, IGFA 2001, Orlov et al. 2009
Grunt sculpin	*Rhamphocottus richardsonii*	Rhamphocittidae	0.0100	3.0400	Froese et al. 2014, Karpov and Kwiecien 1988
Longhorn sculpin	*Myoxocephalus octodecemspinosus*	Cottidae	0.0071	3.1300	Froese et al. 2014
Manacled sculpin	*Synchirus gilli*	Cottidae	0.0071	3.1300	Froese et al. 2014
Padded sculpin	*Artedius fenestralis*	Cottidae	0.0071	3.1300	Froese et al. 2014
Pacific staghorn sculpin	*Leptocottus armatus*	Cottidae	0.0400	2.8200	Froese et al. 2014, Ruiz-Campos et al. 2006
Sailfin sculpin	*Nautichthys oculofasciatus*	Hemitripteridae	0.0045	3.1100	Froese et al. 2014
Shorthorn sculpin	*Myoxocephalus scorpius*	Cottidae	0.0160	3.0560	Froese et al. 2014
Silverspotted sculpin	*Blepsias cirrhosus*	Hemitripteridae	0.0088	3.0278	Froese et al. 2014
Smoothhead sculpin	*Artedius lateralis*	Cottidae	0.0071	3.1300	Froese et al. 2014
Tidepool sculpin	*Oligocottus maculosus*	Cottidae	0.0071	3.1300	Froese et al. 2014
Pacific sanddab	*Citharichthys sordidus*	Paralichthyidae	0.0093	3.0800	Froese et al. 2014
Speckled sanddab	*Citharichthys stigmaeus*	Paralichthyidae	0.0071	3.1500	Froese et al. 2014
Butter sole	*Isopsetta isolepis*	Pleuronectidae	0.0091	3.0900	Froese et al. 2014
C-O Sole	*Pleuronichthys coenosus*	Pleuronectidae	0.0091	3.0900	Froese et al. 2014
English sole	*Parophrys vetulus*	Pleuronectidae	0.0091	3.0153	Froese et al. 2014, Gunderson et al. 1988
Rock sole	*Lepidopsetta spp.*	Pleuronectidae	0.0206	2.8580	Froese et al. 2014

Threespine stickleback	*Gasterosteus aculeatus*	Gasterostaeidae	0.0114	3.1160	Froese et al. 2014, Ruiz-Campos et al. 2006
Tubesnout	*Aulorhynchus flavidus*	Aulorhynchidae	0.0004	3.4300	Bayer 1980
Brown Irish lord	*Hemilepidotus spinosus*	Hexagrammidae	0.0071	3.1300	Froese et al. 2014
Unknown sculpin		Cottidae	0.0138	3.0815	mean values of known Cottidae
Unknown flatfish		Pleuronectidae	0.0106	3.0657	mean values of known Pleuronectidae
Unknown greenling		Hexagrammidae	0.0077	3.1859	mean values of known Hexagrammidae
Unknown Myoxocephalus	*Myoxocephalus sp.*	Cottidae	0.0137	3.1018	mean values of known *Myoxocephalus sp.*
Unknown gunnel		Pholidae	0.0018	3.1500	mean values of known Pholidae
Unknown Artedius	*Artedius sp.*	Cottidae	0.0071	3.1300	mean values of known *Artedius* sp.

Table S3: Key to marker FA used in analysis. References 1 - Dalsgaard et al. 2003, 2 - Volkman et al. 1980, 3 - Jaschinski et al. 2011, 4 - Kharlamenko et al. 2001, 5 - Galloway et al. 2012, 6 - Kelly and Scheibling 2012, 7 – Ackman et al. 1968, 8 - Alfaro et al. 2006.

FA Group	Abbreviation	FA	Marker for	Reference
Bacteria	BAC	15:0	Bacterial	1
		iso-15:0		1
		iso-16:0		1
		17:0		1
		iso-17:0		1
		anteiso-17:0		1
		17:1w9		1
		anteiso-18:0		1
		18:1ω7		2, 3
Polyunsaturated fatty acid	PUFA	≥ 2 double bonds		5,6
Linoleic acid	LIN	18:2ω6	Seagrass, vascular plants	4, 5, 6
Alpha linolenic acid	ALA	18:3ω3	Seagrass, vascular plants	4, 5, 6
Arachidonic acid	ARA	20:4ω6	Brown and red algae	5,6
Palmitoleic acid	PAL	16:1ω7	Diatoms	1, 5, 6
Eicosapentaenoic acid	EPA	20:5ω3	Diatoms, dinoflagellates, brown and red algae	5, 6, 7
Docosahexaenoic acid	DHA	22:6ω3	Zooplankton	1, 4, 8

Table S4: Summary of site data including location, sea otter density, and environmental data. 2018 sea otter density reflects sea otter densities measured for this study. Model sea otter density represent estimated from Tinker et al. (2019). BDL = below detection limit.

			Sea otter density				Water temperature (°C)		Salinity (ppt)		DO (mg/l)		Light (PAR)				Nitrate (µmol/L)		Phosphate (µmol/L)	
Site	Latitude	Longitude	2018	Model	Environmental sampling date	Sediment score	1 m	5 m	1 m	5 m	1 m	5 m	Surface	1 m	5 m	%	1 m	5 m	1 m	5 m
H1	55.735	-133.295	10.7	3.663	7/25	4.0 (0.0)	13.3	12.1	32.6	32.6	9.63	9.34	2319.0	1445.6	281.4	19.5	0.023	0.037	0.194	0.279
H2	55.739	-133.314	10.7	3.663	7/25	1.3 (0.46)	12.3	11.8	32.7	32.7	9.18	8.60	2245.0	1169.9	145.8	12.5	0.042	0.057	0.286	0.285
H3	55.706	-133.342	3.4	3.663	7/25	1.8 (0.71)	14.6	12.6	32.7	32.7	9.82	8.73	2448.0	1501.1	56.9	3.8	0.009	0.003	0.121	0.112
L1	55.230	-132.924	0	0.163	7/24	2.8 (0.89)	14.9	14.2	32.9	32.2	10.33	9.40	2250.0	1229.1	263.7	21.5	0.001	0.011	0.142	0.249
L2	55.249	-132.881	0	0.163	7/24	2.4 (0.52)	15.3	12.7	32.1	32.2	10.04	8.50	1984.8	901.5	153.6	17.0	BDL	0.019	0.171	0.260
L3	55.189	-132.843	0.04	0.163	7/24	2.5 (0.53)	15.0	13.4	32.5	32.4	10.79	10.25	2288.0	1206.6	251.6	20.9	0.013	0.015	0.247	0.192

Table S5: Results from generalized linear mixed effects models of taxa biomass for the fixed effect of sea otter region (high sea otter region as reference group) and random effect of site. Since only one beach seine was conducted at each site, random site effects were not evaluated.

Factor	Transformation	Fixed effects	Estimate	Std. Error	df	t-value	p-value	Random effect of site	SD
Seagrass	log	Intercept	4.864	0.280	42	17.370	**< 0.001**	Intercept	0.446
		Low sea otter	-0.522	0.396	4	-1.319	0.268	Residual	0.540
Epiphytes	square-root	Intercept	0.054	0.010	42	5.342	**< 0.001**	Intercept	0.016
		Low sea otter	0.007	0.014	4	0.486	0.652	Residual	0.023
Epifauna	square-root	Intercept	0.306	0.031	42	9.969	**< 0.001**	Intercept	< 0.001
		Low sea otter	-0.033	0.043	4	-0.752	0.494	Residual	0.150
Pentidotea	forth-root	Intercept	0.391	0.037	42	10.588	**< 0.001**	Intercept	< 0.001
		Low sea otter	0.002	0.052	4	0.045	0.966	Residual	0.181
Limpet	cube-root	Intercept	0.171	0.049	42	3.480	**0.001**	Intercept	0.075
		Low sea otter	-0.050	0.070	4	-0.726	0.508	Residual	0.116
Clams	cube-root	Intercept	4.332	0.364	42	11.903	**< 0.001**	Intercept	0.402
		Low sea otter	2.684	0.515	4	5.214	**0.007**	Residual	1.373
Butter clam	none	Intercept	4.949	48.233	42	0.103	0.919	Intercept	70.134
		Low sea otter	220.854	68.212	4	3.238	**0.032**	Residual	128.391
Macoma spp. clam	forth-root	Intercept	2.348	0.533	42	4.409	**< 0.001**	Intercept	0.856
		Low sea otter	0.635	0.753	4	0.843	0.447	Residual	0.974
Crabs	forth-root	Intercept	2.969	0.337	18	8.820	**< 0.001**	Intercept	< 0.001
		Low sea otter	2.833	0.476	4	5.951	**0.004**	Residual	1.166
Graceful crab	forth-root	Intercept	2.116	0.631	18	3.354	**0.004**	Intercept	0.833
		Low sea otter	-1.392	0.892	4	-1.560	0.194	Residual	1.414
Helmet crab	square-root	Intercept	4.336	1.581	18	2.743	**0.013**	Intercept	2.264
		Low sea otter	-4.336	2.235	4	-1.940	0.124	Residual	3.078
Red rock crab	cube-root	Intercept	0.000	0.447	18	0.000	1.000	Intercept	< 0.001
		Low sea otter	10.150	0.632	4	16.069	**< 0.001**	Residual	1.547
Fish	log	Intercept	2.417	0.622	4	3.884	**0.018**		
		Low sea otter	-0.610	0.880	1	-0.693	0.527		
Shiner perch	forth-root	Intercept	1.324	0.320	4	4.135	**0.014**		

		Low sea otter	-0.292	0.453	1	-0.644	0.555
Snake prickleback	forth-root	Intercept	1.357	0.322	4	4.211	**0.014**
		Low sea otter	-0.502	0.456	1	-1.102	0.332
Staghorn sculpin	forth-root	Intercept	0.769	0.360	4	2.137	0.099
		Low sea otter	-0.106	0.509	1	-0.208	0.845

Table S6: Mean tissue values (+/- SD) and results of t-test for differences in $\delta^{13}C$ and $\delta^{15}N$ values for conspecifics between high and low sea otter regions.

	n		δ13C				$\delta^{15}N$			
Abbr.	High	Low	High	Low	t	p	High	Low	t	p
SG	7	6	-7.50 (0.76)	-8.20 (0.80)	1.606	0.138	6.18 (0.60)	5.69 (0.64)	1.427	0.183
EP	5	3	-14.26 (0.45)	-15.10 (0.74)	1.764	0.179	8.52 (0.30)	9.40 (0.45)	-3.036	0.054
FU	6	6	-14.13 (2.66)	-14.04 (2.99)	-0.057	0.956	7.56 (0.43)	6.99 (0.34)	2.522	**0.031**
SK	5	6	-16.96 (2.33)	-18.55 (1.32)	1.355	0.224	8.19 (0.39)	7.42 (0.37)	3.324	**0.010**
UL	6	5	-17.83 (3.19)	-19.23 (2.07)	0.875	0.405	7.35 (0.21)	7.22 (0.42)	0.663	0.533
IDO	6	7	-13.18 (0.65)	-12.62 (0.38)	-1.859	0.101	9.25 (0.31)	9.30 (0.27)	-0.300	0.770
BUT	6	6	-16.81 (0.75)	-16.90 (0.49)	0.234	0.821	8.17 (0.21)	9.48 (0.44)	-6.568	**< 0.001**
MAC	6	6	-11.67 (1.34)	-12.12 (0.77)	0.709	0.498	10.13 (0.70)	10.62 (0.61)	-1.296	0.225
DSH	6	6	-12.62 (0.64)	-13.20 (0.49)	1.474	0.178	11.86 (0.19)	11.48 (0.33)	2.398	**0.044**
HEL	6	4	-11.81 (0.79)	-11.35 (1.52)	-0.553	0.609	11.68 (0.45)	11.14 (0.48)	1.804	0.120
GRC	5	6	-12.42 (0.62)	-13.04 (0.71)	1.554	0.155	11.60 (0.35)	12.15 (0.71)	-1.693	0.131
RRC	-	6	-	-13.76 (0.53)	-	-	-	12.69 (0.42)	-	-
SHN	6	6	-15.33 (0.66)	-15.94 (1.50)	0.912	0.393	13.40 (0.37)	12.86 (0.07)	3.513	**0.015**
SNK	6	4	-13.71 (1.17)	-13.81 (1.69)	0.107	0.919	12.96 (0.29)	12.84 (0.61)	0.377	0.726
STG	6	6	-15.25 (0.92)	-13.95 (0.66)	-2.798	**0.021**	14.00 (0.23)	13.45 (0.64)	1.973	0.094

Table S7: PERMANOVA results on the effect of sea otter region on FA profiles of sampled taxa. All PERMANOVA were conducted with 9999 permutations.

	df	SS	R^2	pseudo - F	p-value
Seagrass					
Sea otter	1	0.021	0.210	2.929	**0.017**
Residual	11	0.078	0.790		
Epiphytes					
Sea otter	1	0.067	0.367	3.477	0.054
Residual	6	0.116	0.633		
Fucus					
Sea otter	1	0.010	0.325	4.806	**0.002**
Residual	10	0.021	0.675		
Sugar kelp					
Sea otter	1	0.025	0.133	1.390	0.251
Residual	9	0.164	0.866		
Ulva					
Sea otter	1	0.106	0.245	3.239	**0.019**
Residual	10	0.327	0.755		
Pentidotea					
Sea otter	1	0.075	0.240	3.471	**0.042**
Residual	11	0.239	0.760		
Limpet					
Sea otter	1	0.041	0.226	3.211	**0.005**
Residual	11	0.140	0.774		
Butter clam					
Sea otter	1	0.079	0.245	2.920	**0.047**
Residual	9	0.243	0.755		
Macoma spp. clam					
Sea otter	1	0.031	0.168	2.020	0.068
Residual	9	0.154	0.832		
Dock shrimp					
Sea otter	1	0.024	0.445	8.026	**0.003**
Residual	10	0.030	0.555		
Helmet crab					
Sea otter	1	0.008	0.201	2.015	**0.040**
Residual	8	0.032	0.799		
Graceful crab					
Sea otter	1	0.032	0.295	3.766	**0.003**
Residual	9	0.076	0.705		
Shiner perch					
Sea otter	1	0.019	0.156	1.659	0.166
Residual	9	0.102	0.844		
Snake prickleback					
Sea otter	1	0.027	0.218	2.506	**0.034**
Residual	9	0.098	0.782		
Staghorn sculpin					

Sea otter	1	0.018	0.242	2.873	**0.026**
Residual	9	0.057	0.758		

Table S8: Full SIMPER results. All SIMPER analyses were performed with 9999 permutations.

Taxon	N FA sum > 90%	FA	Mean FA %		Average dissimilarity (SD)	Cumulative dissimilarity
			High sea otter	Low sea otter		
Seagrass	10	18:3ω3	36.0	37.6	1.2 (1.0)	19.1
		16:0	33.1	32.3	0.9 (0.6)	33.2
		16:3ω3	5.7	7.0	0.8 (0.5)	45.6
		18:2ω6	6.2	7.0	0.8 (0.6)	57.9
		14:0	1.6	0.6	0.5 (0.5)	65.8
		18:0	4.6	4.7	0.4 (0.3)	72.6
		22:0	5.5	5.0	0.3 (0.2)	77.2
		16:1ω7	0.8	0.9	0.3 (0.2)	81.6
		20:5ω3	0.7	0.2	0.3 (0.2)	86.0
		20:0	3.4	2.9	0.3 (0.2)	90.3
Epiphytes	13	16:0	38.3	34.7	2 (1.2)	17.3
		18:3ω6	0.9	3.9	1.5 (0.5)	30.4
		20:5ω3	15	15.1	1.3 (0.8)	41.4
		14:0	17.1	19.4	1.2 (0.6)	51.6
		16:4ω3	2.9	1.7	1.2 (0.4)	61.7
		16:1ω7	10.1	7.9	1.1 (0.4)	71.4
		18:4ω3	0	1.5	0.7 (0.6)	77.8
		18:0	2.9	2.6	0.3 (0.2)	80.3
		18:2ω6	1	1.6	0.3 (0.1)	82.8
		20:4ω6	1.1	1.5	0.2 (0.2)	85
		16:3ω3	1.6	1.3	0.2 (0.2)	87.1
		16:2ω6	2.2	2	0.2 (0.2)	89.2
		22:6ω3	1.6	1.6	0.2 (0.1)	91.2
Fucus	15	16:0	30.9	31.2	0.7 (0.4)	15.6
		18:1ω9	11.3	11.8	0.4 (0.3)	25.8
		20:4ω6	7.3	6.5	0.4 (0.3)	35.3
		14:0	19.1	19.5	0.4 (0.3)	44.7
		20:5ω3	4.0	3.3	0.3 (0.2)	52.5
		18:2ω6	11.4	11.3	0.3 (0.2)	59.3
		18:3ω3	5.2	4.8	0.3 (0.2)	65.5
		18:0	2.2	2.7	0.2 (0.2)	71.0
		18:4ω3	2.1	1.8	0.2 (0.1)	75.7
		20:1ω9	0.4	0.1	0.1 (< 0.1)	79.2
		20:3ω6	1.1	1.2	0.1 (0.1)	82.1
		20:0	1.0	1.2	0.1 (0.1)	84.7
		16:1ω7	0.9	1.1	0.1 (0.1)	87.3
		15:0	0.8	0.9	0.1 (< 0.1)	89.2
		22:1ω9	0.2	0.0	0.1 (0.1)	91.0
		15:0	1.3	1.1	0.1 (0.1)	90.5
Sugar kelp	13	16:0	31.6	31.4	1.7 (1.2)	18.1
		18:4ω3	4	4.2	1.4 (0.9)	33.1
		20:4ω6	9.5	10.6	1 (0.7)	43.4
		20:5ω3	8.7	10.4	1 (0.8)	53.5
		14:0	19.6	19.3	0.7 (0.5)	60.8
		16:3ω6	2.7	2.8	0.5 (0.3)	66
		18:0	2.7	2.2	0.5 (0.3)	70.7
		18:1ω9	4.6	4.7	0.4 (0.4)	75.1
		18:3ω3	2.2	2.8	0.4 (0.3)	79
		20:0	1.3	0.7	0.3 (0.1)	82.4
		18:2ω6	7.7	7.6	0.3 (0.3)	85.3

		16:1ω7	1.3	0.9	0.3 (0.2)	88
		15:0	1.1	0.7	0.2 (0.1)	90.1
Ulva	14	18:2ω6	5.5	10.0	3 (2.0)	21.0
		16:0	45.6	41.8	2.1 (1.5)	36.0
		18:4ω3	8.9	7.3	1.2 (1.1)	44.5
		18:3ω3	15.6	15.4	1.1 (0.8)	52.3
		16:3ω3	3.4	4.4	1 (0.6)	58.9
		20:1ω7	0.0	1.7	0.8 (0.9)	64.6
		22:5ω3	1.6	2.3	0.7 (0.6)	69.4
		18:1ω7	4.9	4.8	0.6 (0.4)	73.7
		22:0	1.8	0.7	0.5 (0.5)	77.5
		16:2ω6	1.2	1.1	0.5 (0.3)	80.8
		18:0	1.9	1.3	0.4 (0.4)	83.5
		18:3ω6	1.1	0.9	0.4 (0.2)	85.9
		20:5ω3	1.8	1.3	0.3 (0.3)	88.2
		20:4ω3	0.7	0.2	0.3 (0.3)	90.1
Pentidotea	18	14:0	6.4	2.5	2.2 (1.3)	16.1
		20:5ω3	21.9	22.2	1.9 (1.2)	29.7
		18:0	11.1	13.7	1.7 (1.0)	42.3
		20:4ω6	2.5	4.7	1.1 (0.6)	50.3
		16:1ω7	4.2	2.5	1.1 (0.7)	58.1
		16:0	28.4	29.3	0.8 (0.5)	63.8
		18:4ω3	1.9	1.1	0.6 (0.4)	68.5
		18:1ω9	4.3	4.0	0.4 (0.3)	71.4
		22:6ω3	4.2	4.4	0.4 (0.3)	74.2
		16:2ω6	1.0	0.3	0.4 (0.3)	77.0
		22:0	0.9	1.6	0.4 (0.3)	79.7
		18:1ω7	2.6	2.8	0.3 (0.3)	82.0
		18:3ω3	1.7	1.6	0.3 (0.2)	84.0
		18:2ω6	1.7	2.0	0.2 (0.2)	85.5
		20:3ω3	0.4	0.8	0.2 (0.2)	86.9
		20:2ω6	0.4	0.8	0.2 (0.1)	88.2
		20:4ω3	0.8	0.5	0.2 (0.1)	89.5
		20:1ω9	0.8	0.7	0.2 (0.2)	90.8
Limpet	20	20:5ω3	18.4	16.0	1.3 (1.1)	13.8
		16:0	26.6	28.5	0.9 (0.5)	23.7
		18:0	10.8	9.5	0.8 (0.6)	32.2
		16:1ω7	4.7	4.2	0.7 (0.4)	39.2
		20:1ω9	2.9	4.2	0.6 (0.6)	45.8
		18:1ω7	6.0	5.0	0.5 (0.7)	51.4
		22:5ω3	1.4	2.2	0.5 (0.5)	56.4
		14:0	7.9	8.0	0.4 (0.3)	60.8
		20:1ω7	2.4	3.1	0.4 (0.3)	64.9
		18:4ω3	1.4	0.9	0.4 (0.3)	68.8
		20:4ω6	3.4	3.9	0.4 (0.2)	72.5
		18:1ω9	1.5	2.0	0.3 (0.2)	75.3
		22:2ω6	1.6	1.3	0.3 (0.2)	77.9
		20:2ω6	0.7	1.0	0.2 (0.2)	80.4
		18:2ω6	1.4	1.6	0.2 (0.1)	82.6
		20:4ω3	1.1	1.1	0.2 (0.1)	84.6
		20:3ω3	0.4	0.7	0.2 (0.1)	86.4
		18:2ω3	0.3	0.0	0.1 (0.2)	87.9
		18:3ω3	0.5	0.7	0.1 (0.1)	89.3
		16:2ω6	0.5	0.3	0.1 (0.1)	90.6
Butter clam	18	16:0	34.6	31.1	1.7 (0.8)	13.1

		22:6ω3	16.5	13.8	1.4 (0.9)	23.9
		22:2ω6	1.2	2.3	1.2 (1.0)	32.7
		20:5ω3	9.8	8.3	1.1 (0.8)	41.3
		22:1ω9	0.1	2.1	1.0 (1.0)	49.0
		22:5ω3	1.9	3.7	0.9 (0.5)	55.5
		22:4ω6	0.5	2.0	0.8 (0.3)	61.3
		18:0	12.7	13.5	0.7 (0.5)	66.5
		20:1ω9	1.9	1.1	0.4 (0.3)	69.7
		14:0	1.6	1.5	0.4 (0.4)	72.7
		20:4ω6	1.7	2.5	0.4 (0.1)	75.5
		iso - 17:0	3.2	3.5	0.3 (0.2)	78.1
		20:2ω6	1.1	0.5	0.3 (0.2)	80.5
		18:4ω3	0.3	0.6	0.3 (0.2)	82.8
		aniso - 17:0	0.9	1.4	0.3 (0.2)	84.8
		20:1ω7	3.5	3.0	0.2 (0.1)	86.6
		17:0	1.3	1.8	0.2 (0.1)	88.4
		22:4ω3	0.7	0.4	0.2 (0.2)	90.1
Macoma spp.	22	20:1ω9	6.2	5.4	0.8 (0.9)	10.0
		20:5ω3	9.2	9.4	0.7 (0.5)	19.0
		22:5ω3	1.9	2.9	0.6 (0.6)	27.0
		16:0	27.3	26.3	0.6 (0.4)	34.3
		20:1ω7	2.3	2.8	0.5 (0.4)	40.3
		22:6ω3	7.3	7.5	0.5 (0.3)	46.1
		14:0	2.4	2.1	0.4 (0.3)	51.6
		18:0	17.9	18	0.4 (0.3)	56.5
		15:0	3.1	2.7	0.3 (0.3)	60.9
		16:1ω7	1.3	1.9	0.3 (0.2)	64.6
		17:0	2.9	2.7	0.3 (0.2)	68.0
		20:4ω6	4.5	4.8	0.3 (0.2)	71.4
		iso - 17:0	3.3	3.6	0.2 (0.1)	73.8
		18:4ω3	0.6	0.3	0.2 (0.1)	75.9
		18:1ω9	2.7	2.5	0.2 (0.1)	78.0
		aniso - 18:0	0	0.3	0.2 (0.1)	80.1
		22:4ω3	0.4	0.6	0.2 (0.2)	82.2
		17:1ω9	0.6	0.5	0.2 (0.1)	84.3
		17:1ωX	0.3	0.1	0.2 (0.2)	86.2
		22:4ω6	0.7	1	0.1 (0.1)	87.8
		aniso - 17:0	1.1	1.3	0.1 (<0.1)	89.4
		20:0	0.4	0.2	0.1 (0.1)	90.9
Dock shrimp	16	16:0	38.0	35.8	1.2 (0.7)	20.3
		20:5ω3	19.5	18.3	0.6 (0.3)	31.0
		18:0	9.4	10.5	0.6 (0.4)	41.1
		15:0	0.8	1.8	0.5 (0.5)	49.5
		22:6ω3	11.6	10.9	0.5 (0.3)	58.0
		17:0	1.2	1.9	0.3 (0.2)	63.5
		20:4ω6	1.1	1.6	0.3 (0.1)	68.0
		14:0	3.4	3.3	0.2 (0.2)	72.4
		17:1ω9	0.1	0.5	0.2 (0.1)	75.4
		22:5ω3	0.9	0.9	0.2 (0.1)	78.2
		16:1ω7	1.9	2.2	0.1 (0.1)	80.8
		iso - 17:0	0.5	0.7	0.1 (0.1)	83.3
		18:1ω9	3.9	3.9	0.1 (0.1)	85.4
		18:3ω3	0.4	0.6	0.1 (0.1)	87.1
		18:2ω6	1.5	1.5	0.1 (0.1)	88.8
		18:4ω3	0.0	0.2	0.1 (< 0.1)	90.1

Helmet crab	18	20:5ω3	27.8	26.5	1.0 (0.6)	17.9
		16:0	28.9	30.4	0.9 (0.7)	33.6
		22:6ω3	11.7	10.5	0.7 (0.6)	45.2
		18:0	11.1	11.1	0.5 (0.3)	54.6
		20:4ω6	2.9	3.3	0.3 (0.2)	60.7
		17:0	1.2	1.0	0.2 (0.2)	64.1
		22:5ω3	1.2	1.5	0.2 (0.1)	67.3
		18:1ω7	2.4	2.4	0.2 (0.1)	70.4
		18:1ω9	2.6	2.9	0.2 (0.2)	73.5
		18:3ω3	0.5	0.8	0.2 (0.1)	76.5
		18:2ω6	1.7	1.8	0.1 (0.1)	79.0
		14:0	1.1	0.9	0.1 (0.1)	81.4
		15:0	0.7	0.6	0.1 (0.1)	83.4
		16:1ω7	0.8	0.9	0.1 (0.1)	85.0
		aniso - 17:0	0.3	0.2	0.1 (0.1)	86.5
		iso - 17:0	0.5	0.5	0.1 (< 0.1)	87.8
		20:0	0.4	0.6	0.1 (0.1)	89.1
		20:1ω9	0.5	0.4	0.1 (< 0.1)	90.4
Graeful crab	19	16:0	30.4	27.8	1.3 (0.9)	14.9
		18:0	8.8	10.7	1.1 (1.0)	27.5
		22:6ω3	12.5	11.2	0.8 (0.7)	36.5
		20:4ω6	2.1	3.5	0.7 (0.3)	44.2
		20:5ω3	23.3	23.8	0.5 (0.4)	50.3
		18:2ω6	1.9	1.2	0.4 (0.3)	54.8
		17:0	2.2	2.2	0.4 (0.3)	59.0
		15:0	1.3	1.8	0.4 (0.3)	63.0
		iso - 17:0	1.1	1.8	0.3 (0.2)	66.8
		16:1ω7	1.9	2.2	0.3 (0.2)	70.4
		20:2ω6	1.2	0.6	0.3 (0.3)	73.7
		18:1ω9	3.0	3.2	0.3 (0.2)	77.0
		22:5ω3	2.1	1.7	0.3 (0.2)	80.1
		18:1ω7	2.3	1.9	0.2 (0.2)	82.5
		aniso - 17:0	0.7	1.0	0.2 (0.1)	84.9
		17:1ω9	0.5	0.6	0.2 (0.2)	87.2
		14:0	0.8	0.7	0.1 (0.1)	88.6
		aniso - 18:0	0.0	0.2	0.1 (< 0.1)	89.8
		22:4ω3	0.4	0.3	0.1 (0.1)	91.0
		C22.6w3	18.8	19.8	1.9 (1.4)	21.5
Shiner perch	16	16:0	34.3	37.7	1.7 (1.3)	41
		18:1ω9	3.7	3.4	0.8 (0.6)	49.8
		20:5ω3	12.6	12.1	0.6 (0.5)	56.7
		14:0	2	1.8	0.6 (0.4)	63.2
		22:5ω3	2.5	1.5	0.5 (0.3)	69.1
		18:0	14.3	14.2	0.4 (0.3)	73.3
		16:1ω7	1.3	0.6	0.3 (0.2)	77.3
		18:4ω3	0.3	0.4	0.2 (0.2)	80
		20:4ω6	2.3	2.2	0.2 (0.1)	82.7
		18:1ω7	1.7	1.5	0.2 (0.1)	84.9
		20:1ω9	0.5	0.5	0.1 (0.1)	86.3
		18:2ω6	0.9	0.8	0.1 (0.1)	87.5
		20:4ω3	0.4	0.2	0.1 (0.1)	88.7
		18:3ω3	0.4	0.3	0.1 (0.1)	89.9
		22:4ω6	0.3	0.1	0.1 (0.1)	90.8
Snake prickleback	20	22:6ω3	13.6	15.5	1.9 (1.4)	21.6
		16:0	33.1	34.3	1.0 (0.8)	32.8

		20:5ω3	17.3	16.5	0.7 (0.6)	40.7
		20:4ω6	2.6	3.3	0.6 (0.4)	47.4
		22:5ω3	2.8	2.0	0.6 (0.5)	53.9
		18:0	11.5	11.1	0.5 (0.3)	59.7
		18:1ω9	2.9	2.9	0.4 (0.3)	64.4
		14:0	2.5	2.1	0.3 (0.1)	67.4
		18:1ω7	2.3	2.0	0.2 (0.2)	70.1
		20:1ω7	0.7	0.9	0.2 (0.2)	72.6
		16:1ω7	1.9	1.5	0.2 (0.2)	75.1
		18:2ω6	1.0	0.7	0.2 (0.1)	77.4
		17:0	1.2	1.4	0.2 (0.1)	79.6
		15:0	0.9	1.2	0.2 (0.1)	81.6
		20:2ω6	0.4	0.1	0.1 (0.1)	83.3
		18:3ω3	0.5	0.3	0.1 (0.1)	84.9
		iso - 17:0	0.7	0.8	0.1 (0.1)	86.5
		22:4ω6	0.5	0.3	0.1 (0.1)	88.0
		20:1ω9	0.8	0.7	0.1 (0.1)	89.4
		18:4ω3	0.0	0.2	0.1 (0.1)	90.8
Staghorn sculpin	16	22:6ω3	17.1	21.2	2.1 (1.1)	26.1
		20:5ω3	15.9	13.3	1.3 (0.7)	42.0
		16:0	32.5	30.7	1.1 (0.9)	55.7
		18:0	14.4	14.1	0.5 (0.3)	62.1
		22:5ω3	4.0	3.5	0.5 (0.3)	67.9
		18:1ω9	3.3	3.7	0.3 (0.3)	72.1
		20:4ω6	2.5	2.1	0.3 (0.2)	75.5
		14:0	1.2	1.3	0.2 (0.1)	77.8
		20:4ω3	0.3	0.7	0.2 (0.2)	80.0
		18:4ω3	0.3	0.3	0.1 (0.1)	81.9
		17:0	0.8	1.0	0.1 (0.1)	83.6
		15:0	0.5	0.7	0.1 (0.2)	85.2
		iso - 17:0	0.6	0.6	0.1 (0.1)	86.7
		18:2ω6	0.8	0.9	0.1 (0.1)	88.2
		18:3ω3	0.5	0.4	0.1 (0.1)	89.5
		16:1ω7	0.9	0.8	0.1 (0.1)	90.7

Table S9: Results of Mann-Whitney U tests for differences in marker FA/FA groups for conspecifics between low and high sea otter regions.

	Bacterial		ALA + LIN		Other C_{18} PUFA		PUFA		PAL		ARA		EPA		DHA	
	stat	p	stat	p	stat	p	stat	p	stat	p	stat	p	stat	p	stat	p
Seagrass	30	0.225	10	0.134	36	**0.038**	7	0.054	17	0.617	30	0.225	37	**0.027**	23	0.830
Epiphytes	5	0.551	14	0.074	15	**0.037**	13	0.136	0	**0.037**	12	0.233	7	1.000	5	0.551
Fucus	14	0.575	27	0.173	22	0.575	32	**0.031**	4	**0.031**	32	**0.031**	33	**0.020**	0	**0.003**
Sugar kelp	26	0.055	7	0.171	13	0.784	6	0.121	23	0.171	8	0.235	6	0.121	19	0.407
Ulva	8	0.128	6	0.066	28	0.128	6	0.066	18	1.000	17	0.936	24	0.378	22	0.575
Pentidotea	23	0.830	20	0.943	30	0.225	16	0.520	34	0.074	2	**0.008**	18	0.721	17	0.617
Limpet	10	0.134	12	0.225	30	0.225	29	0.284	27	0.432	13	0.284	36	**0.038**	5	0.027
Butter clams	11	0.523	21	0.315	10	0.411	12	0.648	8	0.235	0	**0.008**	24	0.121	27	0.036
Macoma spp. clam	17	0.936	31	**0.045**	31	**0.045**	11	0.298	4	**0.031**	10	0.230	18	1.000	17	0.936
Dock shrimp	0	**0.005**	13	0.471	0	**0.005**	35	**0.008**	7	0.093	0	**0.005**	34	**0.013**	28	0.128
Helmet crabs	11	0.915	3	0.070	15	0.594	20	0.110	8	0.456	8	0.456	19	0.166	20	0.110
Graceful crabs	8	0.235	23	0.171	27	**0.036**	20	0.411	10	0.411	0	**0.008**	10	0.411	22	0.235
Shiner perch	22	0.575	23	0.471	12	0.378	27	0.173	34	**0.013**	23	0.471	25	0.298	17	0.936
Snake prickleback	12	0.648	28	**0.022**	9	0.315	16	0.927	21	0.315	11	0.523	22	0.235	13	0.784
Staghorn sculpin	28	0.128	22	0.575	20	0.810	25	0.298	18	1.000	13	0.471	7	0.093	34	**0.013**

Supporting figures

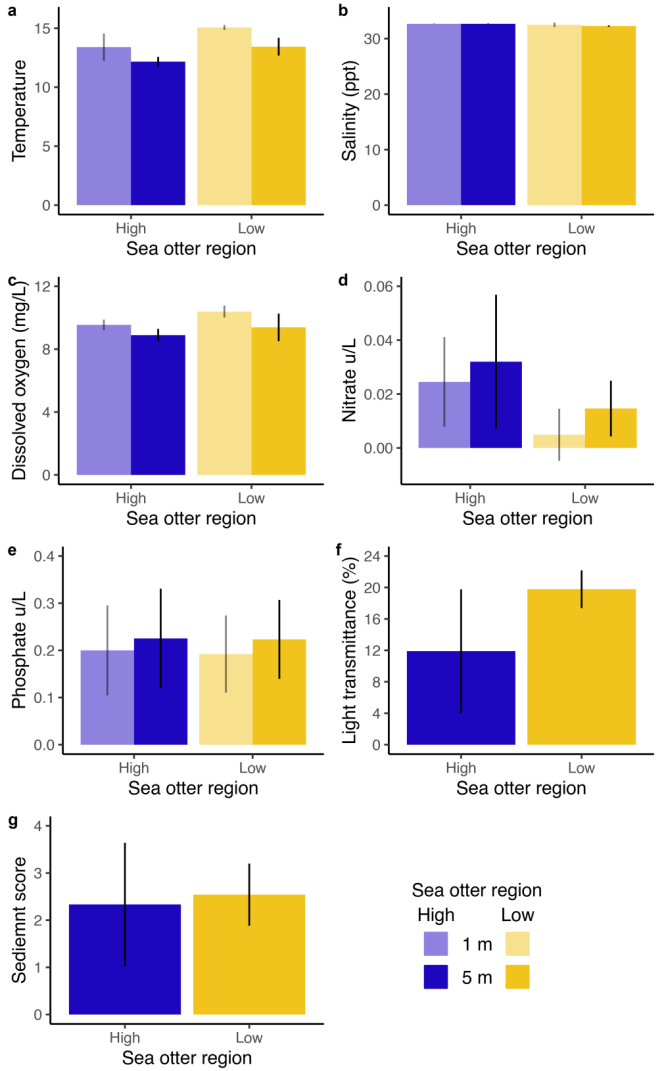

Fig. S1: Mean and error (SD) of environmental variables measured at sites in the high (n=3) and low (n=3) sea otter regions. (a) Water temperature measured at 1 and 5 m depth. (b) Salinity measured at 1 and 5 m depth. (c) Dissolved oxygen measured at 1 and 5 m depth. (d) Water nitrate concentration measured at 1 and 5 m depth. (e) Water phosphate concentration measured at 1 and 5 m depth. (f) Percent light transmittance. (g) Qualitative sediment score.

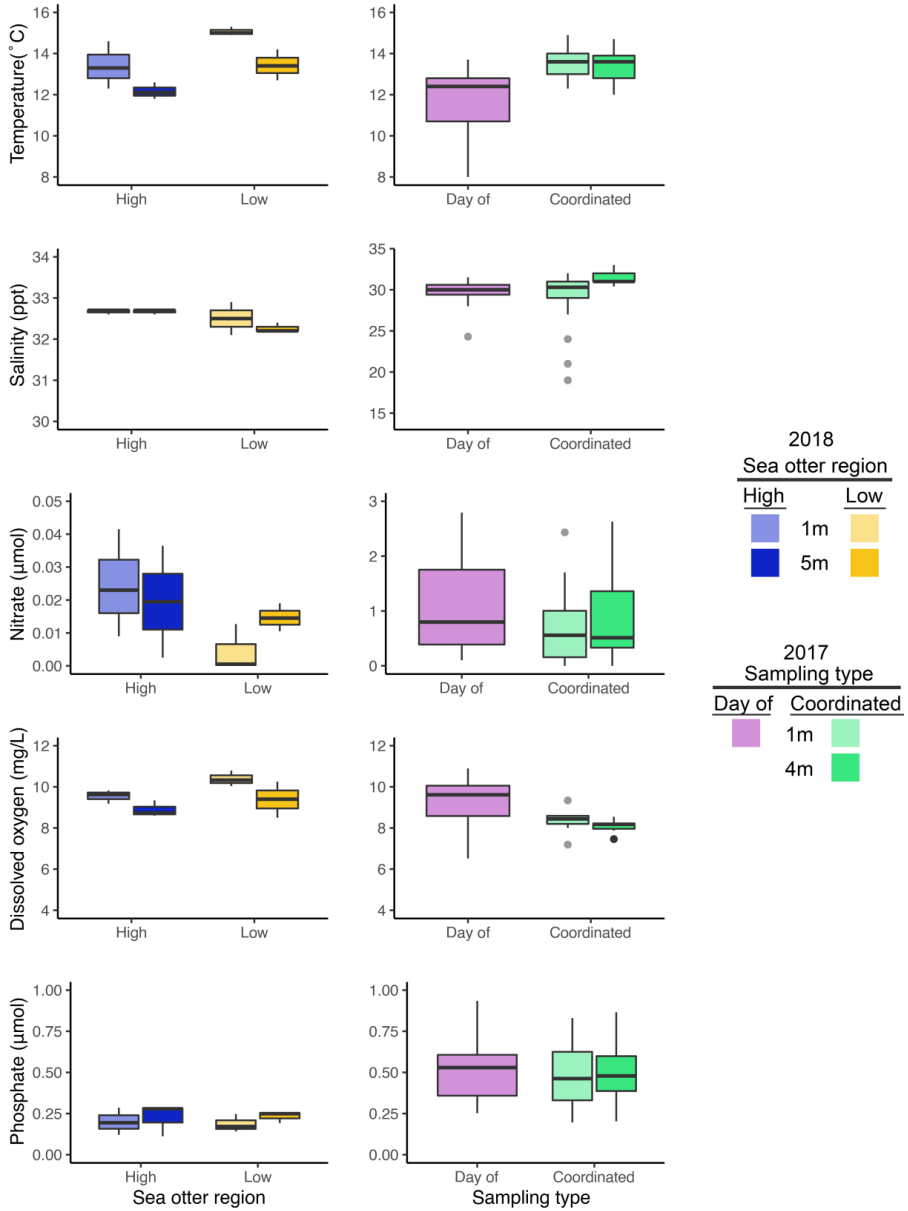

Fig S2: Comparison of environmental parameters measured for this study (2018) in high (blue) and low (gold) sea otter density regions at 1m and 5m water depth to the same parameters measured in Raymond et al. 2021 (2017) measured during "day-of" seagrass sampling (pink; date range April 28th to August 22nd 2017) and during a coordinated sampling (green; August 14th 2017).

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